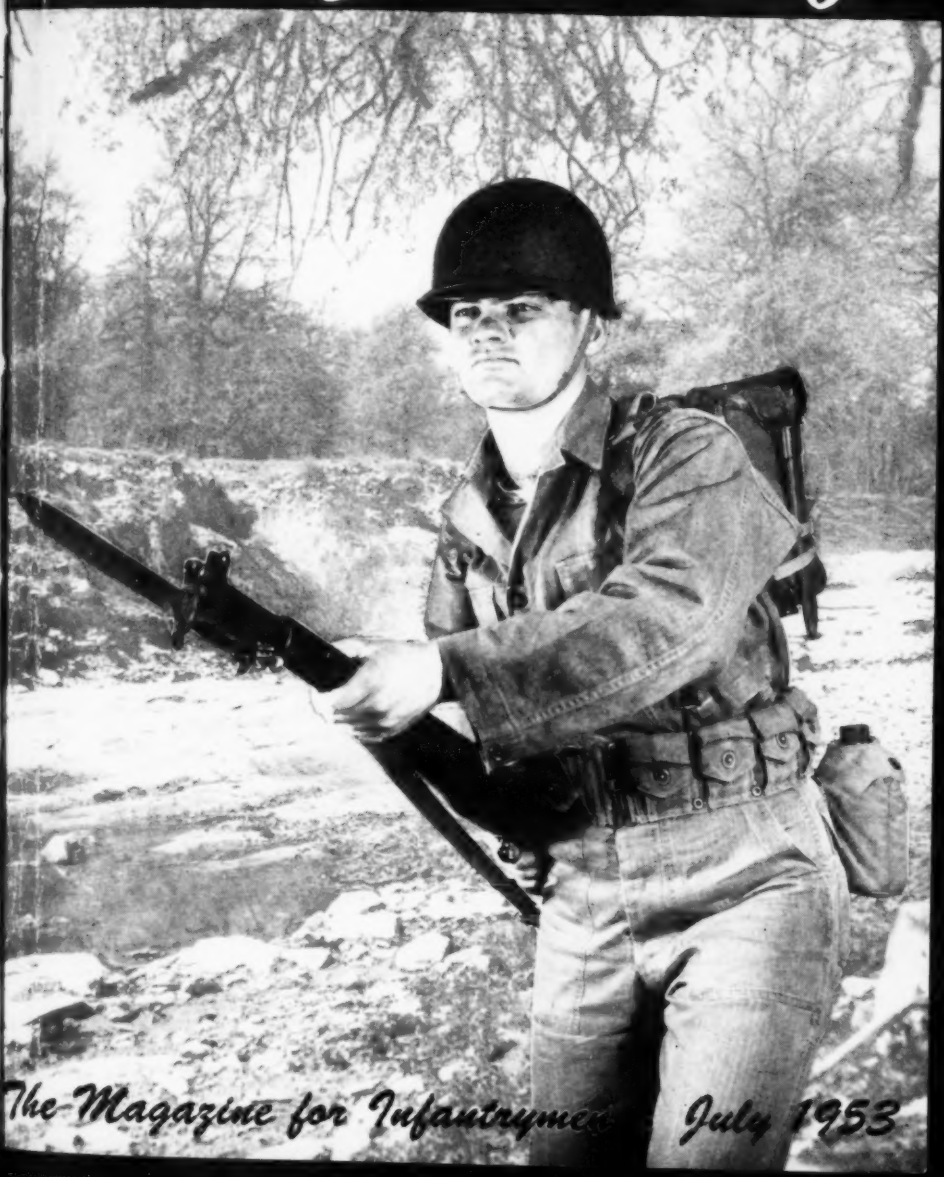
THE

Infantry

SCHOOL QUARTERLY



The Magazine for Infantrymen

July 1953

THE INFANTRY SCHOOL QUARTERLY

JULY 1953

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Soldier on cover is Pfc John F. Flanigan. Picture by M. R. J. Ray, Jr.

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QUARTERLY

Vol. 43 No. 1

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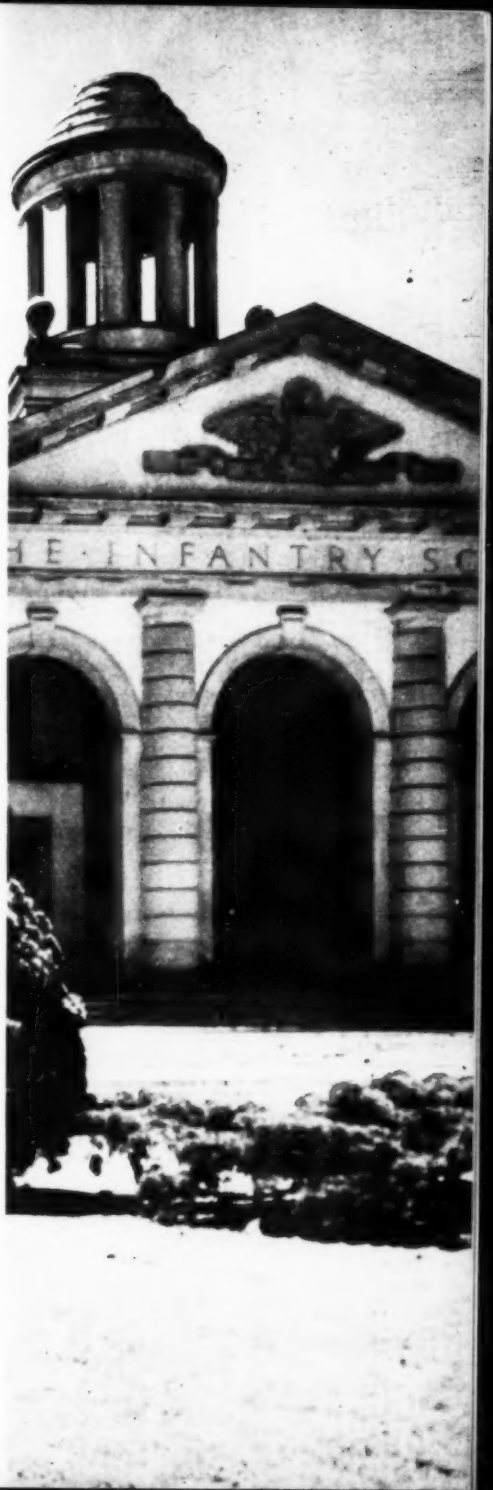

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LETTERS TO THE EDITOR

AGREEMENT

Sir:

I have just finished reading Lt. Kimball's article, "We Need Intelligence and Raider Platoons." (April QUARTERLY) There definitely is a need for a highly trained raider platoon in each regiment in Korea. This, I believe, is particularly so on the stabilized front that we have there today.

. . . the QUARTERLY is right in stating that the ordinary "frag" with adapter is better. The frag beats the mortar shell all around as the tests prove and I think most veterans will agree. I know that a good man behind a rifle grenade can really do wonders with it. And, man, can those air bursts stop a charge cold!

Sincerely,
ROBERT M. LAUTH
Sgt. Co. A, ISD
Ft Benning, Georgia

✕ Sergeant Lauth's letter was too long to print in full. However, it contained so much good information that we contacted him and asked if he would write an article based on his experiences in combat. He agreed to do this and in a future issue his "ideas" on the subject of patrols and raids will appear.

— Editor

A GOOD IDEA

Sir:

For some time now I have been a subscriber to your most instructive publication. Along with our Marine Corps Gazette, I consider it a "must" for my publications library.

For ready reference, I have separated all issues of the QUARTERLY by articles, and have filed them by subject in loose-leaf binders. I am getting a nice collection of constructive ideas.

Your quotable quotes in each issue are most timely, interesting, and a valuable reminder for sober thinking.

Your very truly,

A. B. Harmon
Capt, USMC
I&I, 15th Special Inf Co
USN & MCR Training
Center Dearborn,
Michigan

✕ QUARTERLY readers may be interested to know that we have over 600 Marine subscribers. Our thanks to Captain Harmon for passing on a good idea.

AT YOUR SERVICE

Sir:

. . .Congratulations on your January issue. I recognize it as a particularly interesting issue, both from the point of view of informative content and livelier format.

On page 93 you told about the Infantry School Book Department and invited readers to call on you

if we had a training problem. I have such a problem.

Our National Guard unit has an outdoor weekend staff school coming up very soon. It is partially my responsibility to develop, as part of the training, three hours of training on the Rifle squad. (Letter outlines proposed course.) Could you send me a selection of pertinent lesson plans and other aids. Let me know the cost.

Many thanks,

HAROLD P. FORD
Hq 49th Inf Div
Calif National Guard
Alameda, California

⋊ The writer has already received the instructional material he needs for his training mission. Our Book Department forwarded 8 lesson plans and 8 charts one day after receipt of the request.

When you have a training problem, call on us. We thank H. P. Ford for his reference to the QUARTERLY's "New Look." — *Editor*

81/mm MORTARS

Sir:

Your magazine has been doing wonders for our National Guard Units. We depend almost entirely on the QUARTERLY for new information concerning the Infantry.

I would like to see an article devoted entirely to the 81mm mortar platoon. I've been a mortar platoon leader for nearly two years and find that FM 23-90 fails to answer a multitude of questions, such as: What is the basic load for an 81mm mortar? How deep should base plates be dug in? (The writer lists about thirty-five good questions.)

These are some of the things I would like to know.

Sincerely,

ROBERT A. SOUZA
2nd Lt, Inf
299th Inf
Hawaiian National Guard

⋊ We immediately dispatched Lt Souza's letter to the Weapons Department, The Infantry School, for comment. Due to space limitation, the department thought it best to answer Lt Souza's questions in an article rather than try it here. The article, now being prepared, will appear in an early issue. We want to thank the writer for reminding us that we have neglected the 81mm mortar. Remember — if you have a training problem, let us know.

— *Editor*

Address all letters to: The Editor, Infantry School Quarterly, Training Publications Department, The Infantry School, Fort Benning, Georgia.

Editor's Page

Dear Reader:

Have you ever considered how you can help improve the contents of this magazine?

Reader-authors, you know, are responsible for almost 90 per cent of the articles found in each issue. You are the ones who devise new solutions to old problems, invent new training aids, discover new methods of fighting your unit and have firm "opinions" on tactics and training. In brief, you are the ones who keep Infantry thinking elastic and healthy.

Don't sit on your "doctrine." As an Infantryman, you're making history. Why not try writing it? Enjoy the satisfaction of airing your views, gaining professional recognition and, incidentally, getting paid for your efforts.

If you want to test your military knowledge we suggest you try the quiz on page 53. This is another new feature. We think you will find it useful and entertaining.

Let us hear from you.

Good luck!

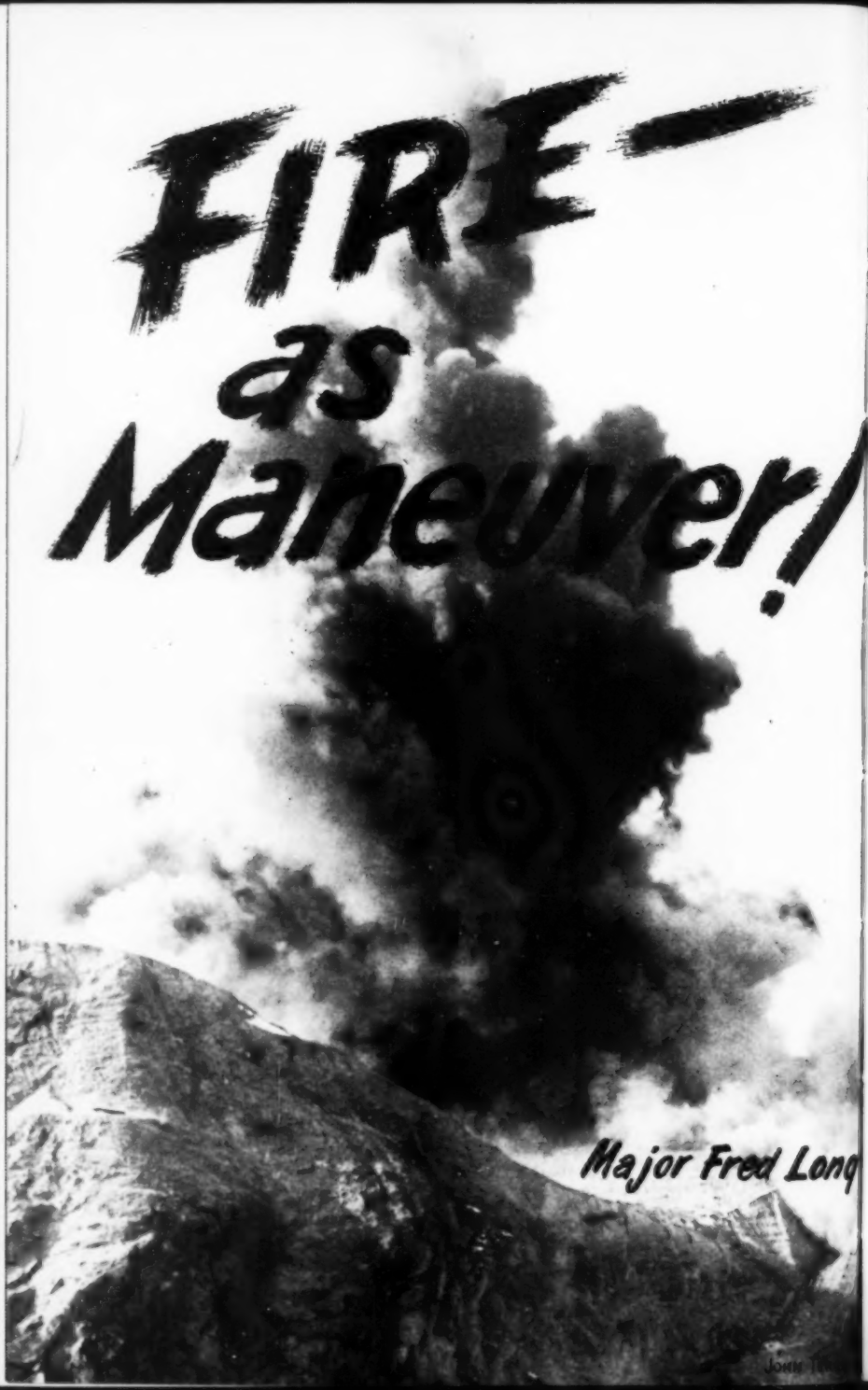
The Editor

P.S. If you don't need the subscription blank in this issue, why not pass it on to a friend?

KOREA:

An alert Infantryman looks for Red snipers in a burning Korean village.

FIRE as Maneuver!



Major Fred Long

✓ Reconnaissance
✓ Ambush
✓ Deception
. . . . . by fire

RECENTLY I was having a quiet cup of coffee in the officers' mess when I overheard a heated argument behind me.

"You're off your rocker," said the first speaker. "You've got to have fire and maneuver, and there's no substitute for your maneuvering force."

"You're just getting stodgy, pal," said a second, quieter voice. "Think about this. Why not fool 'em. Hit them with fire where you're not going. You may need your maneuvering forces for the big attack. Use that firepower for deception, reconnaissance, ambush. In other words, use it instead of a maneuvering force."

The first voice sounded doubtful. "Well, maybe. But I still don't see it. It sounds kind of new. I've heard of fire *and* maneuver, but this sounds like fire *as* maneuver . . . I don't know. . . ." He trailed off.

The conversation started me thinking about our current doctrine on fire and movement. It is a sound doctrine. For the most part we make maximum use of the fire available to the Infantry Division and Regiment. But our needs and our own ingenuity will bring refinements to the doctrine. There are, for example, the techniques of using fire as a maneuvering element or in place of a maneuvering force.

In the present Korean fighting or in any future war, success in combat will go to the side which develops the most aggressive and imaginative techniques for using its weapons. The three techniques we're going to discuss fall into the category of using *fire* as a maneuvering element or in place of a maneuvering force. Let's examine these techniques.

Reconnaissance by Fire

Reconnaissance by fire — the use of fire power as an aid in locating and estimating the strength of the enemy — is an old technique. Normally it entails firing at known and suspected enemy locations in an attempt to draw his fire. To fully explore the possibilities of this technique, let's examine a situation which illustrates its use.

During the offensive-defensive phase of the Korean war an Infantry battalion was assigned an objective (see Figure 1). The battalion commander determined the strength of the enemy occupying the position. He committed B Company to a holding attack on the center and C Company to an attack on the right flank. When the enemy showed signs of attempting to break contact, the battalion commander sent A Company around the left flank with the mission of enveloping the

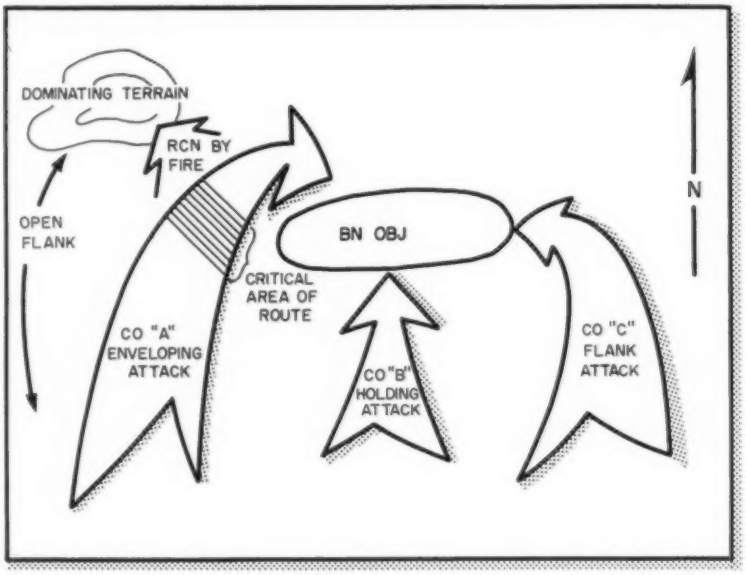


Figure 1. Fire as reconnaissance.

enemy position with the least possible delay.

The A Company Commander decided that his best route would bring his company under observation and within small arms fire range of the dominating terrain on his open (left) flank. He also felt that he would need his entire force to do the best job of enveloping the battalion objective and destroying the enemy.

Here was an excellent opportunity for reconnaissance by fire.

The A Company Commander made up his mind to reconnoiter the dominating terrain using motar fire and to simulate a ground maneuver using small arms fire. If this reconnaissance did not disclose an enemy force, he would screen the dominating terrain with a smoke concentration and continue on his mission with the entire company.

On the other hand, if the reconnaissance by fire showed enemy on the dominating terrain, he would commit one reinforced rifle platoon to a holding attack, and smoke the dominating terrain until the rest of the company cleared the critical area of observation and fire. Then he would launch his enveloping attack with a Company minus one reinforced rifle platoon.

By using this method of reconnaissance, the company commander avoided several possible pitfalls and succeeded in deceiving the enemy.

His job was to envelop an enemy that was threatening to disengage. Speed was essential. A ground reconnaissance would probably have been far too slow to trap the enemy. He avoided the danger of becoming so involved in a secondary operation that he might not be able to accomplish his real mission. And he avoided advancing on an open flank past a key feature that might easily have been occupied by the enemy. At the same time, his fire power served to deceive the enemy as to the direction of the attack.

In this case, reconnaissance was essential, but ground reconnaissance would have been both inconvenient and too slow. The solution: reconnaissance by fire.

I&R units in Korea have also used reconnaissance by fire. They get good results by using fire to flush out the enemy. In this way enemy security elements are forced to disclose their positions but our reconnaissance elements are not committed to maneuver against an objective or area.

Fire for Deception

Let's say we get to talking with that conservative speaker I heard in the officers' mess. We buy him some coffee and describe this technique to him.

"Okay," he says, "call it anything you want. It's a good technique, but there's nothing new about it."

"Granted," I reply. "But let's get to another case where we use fire as maneuver force. Where we'll use our fire power to deceive the enemy. Now how would your fire normally support an attack?"

"I'd put everything I've got on the objective to soften it up. I'd knock out as many enemy weapons as I can."

"And then in the actual attack?"

"The forward observers would move up with the attacking Infantry, moving the supporting fires forward like a screen."

"Is this the best method?"

"It sure is."

Well, he is right. This pattern of fire has been reasonably successful. But the enemy is no fool, and he learns our habits as quickly as we learn his. There are situations that call for other techniques in using fire power. Too often we fail to make use of any possibilities we have to deceive and confuse the enemy. Fire power can be an excellent means of deception.

Let's say that an Infantry battalion has the mission of taking a well-defended position and destroying the enemy on that position (Figure 2). The enemy is defending the objective with a battalion of about 600 men. He has an abundance of automatic weapons. The two approaches to his positions are covered by mortar and artillery concentrations.

The attacking battalion must move through another battalion, which is charged with securing the line of departure. The attacking battalion is responsible only for its own security.

The battalion commander of the attacking unit decides that the enemy position is too strong for a daylight assault. He wants to throw the full weight of his battalion

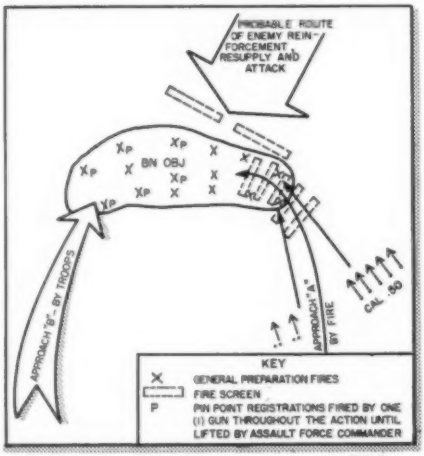

PROBABLE ROUTE OF ENEMY REINFORCEMENT RESUPPLY AND ATTACK
BN OBJ
APPROACH "B" BY TROOPS
APPROACH "A" BY FIRE
CAL .50
KEY
GENERAL PREPARATION FIRES
FIRE SCREEN
P
PIN POINT REGISTRATIONS FIRED BY ONE (1) GUN THROUGHOUT THE ACTION UNTIL LIFTED BY ASSAULT FORCE COMMANDER

Figure 2. Fire as deception.

against one flank of the objective and then roll up the enemy along the unprepared long axis of the position.

He decides to attack at night, using approach "B" and plans to attack the enemy's left flank with his entire force. He decides to use his fire power to maneuver against the position by assaulting the right flank by fire along approach "A."

The fire plan: First, there will be a general preparation from H minus 20 until H-Hour. Artillery fires will move forward along approach "A" at the rate of 200 yards every 15 minutes from H-Hour until H-Hour plus one. At the same time the heavy machine guns from the Heavy Weapons Company and all the battalion's .50 caliber machine guns will assault by fire from echeloned positions along approach "A." Single guns will fire pinpoint registrations on approach "B" and on the right half of the objective in order to protect the flanks of the assault forces, and to keep the enemy immobilized and deceived. The forward observer of the lead assault company will control these registered fires. During the final assault on the objective, the assault by fire will be shifted to screen the left flank of the assaulting forces.

In this situation, the use of fire on approach "A" as a maneuvering element has several advantages. For one thing, the objective receives an over-all fire preparation, but we still keep the element of tactical surprise. We mislead the enemy as to the direction of the actual ground assault, so that the enemy does not put the bulk of his defensive fires on the assaulting forces.

In addition, we force the enemy to commit himself to protect his position from an attack along approach "A," and seal off one flank of the objective. The assault by fire may well deceive the enemy commander of the next higher echelon and lead him to shift his forces in the other direction.

This type of attack is best employed at night if it's to be completely successful. If used in daylight, the objective should be screened by smoke. The technique of using a double flanking movement or envelopment — one prong by troops and the other prong by fire — can be called the use of fire for deception.

Ambush by Fire

During the first six months of 1951, the 7th Infantry Regiment in Korea skillfully used the technique of infiltration and ambush by fire. When the enemy is still within his own lines, it is always desirable to destroy his attack capability by disrupting his formations and killing his men. Here are two examples of how this was done without committing men or maneuver forces.

In early May of 1951 the 7th Infantry had established a patrol base 10 miles in front of the 25th Infantry Division line. For a week the patrol base operated successfully. At the end of about a week, combat intelligence indicated that the enemy was preparing to attack the patrol base on the night of — May, which we will call D-Day.

On the morning of D-Day the 7th Infantry received orders to withdraw and join Corps reserve in Seoul the next day. These two factors — the indications of an enemy attack and orders to withdraw from the patrol base the following morning — made the night of D-Day and the following morning a critical period of time.

The 7th Infantry Commander knew the pattern of enemy attacks. He knew they used long approach marches and moved rapidly into forward assembly areas. He also knew that the enemy almost always attacked early enough to get back to their rear assembly areas before dawn in case they were unsuccessful. In that way they undoubtedly figured their withdrawal would be safe from UN air strikes.

The Regimental Commander knew the enemy strength was located some seven to eight miles from the patrol base. He estimated that they would take about an hour to assemble and three more hours to make the approach march. Darkness came around 2030 on D-Day.

A liaison plane left our lines at 2015 and flew over the enemy's probable assembly area. It reported signs of activity. The Regimental Commander now estimated that, if the attack came, the enemy would arrive in his forward assembly areas 0030. He could be expected to attack from 0100 to 0130. So 0100 was chosen as H-Hour.

The Regimental Commander developed a coordinated fire plan which amounted to an ambush of the enemy attack (Figure 3). Combat intelligence and a knowledge of the terrain and the enemy's habits gave him the probable location of the enemy's rear and forward assembly areas and routes of approach.

Fires of the 155-mm howitzers reached out in a wide fan and hit the rear assembly areas. Following the probable time schedule the enemy would have to use to bring his forces into position, the fan closed and shortened, hitting the routes of approach. Then the light artillery battalion and the heavy mortar company added their fires. As H-Hour approached, Time on Target concentrations were put on the logical forward assembly areas, while the medium artillery pounded reported enemy artillery positions. At H-Hour plus 30 minutes, final defensive mortar fires were placed

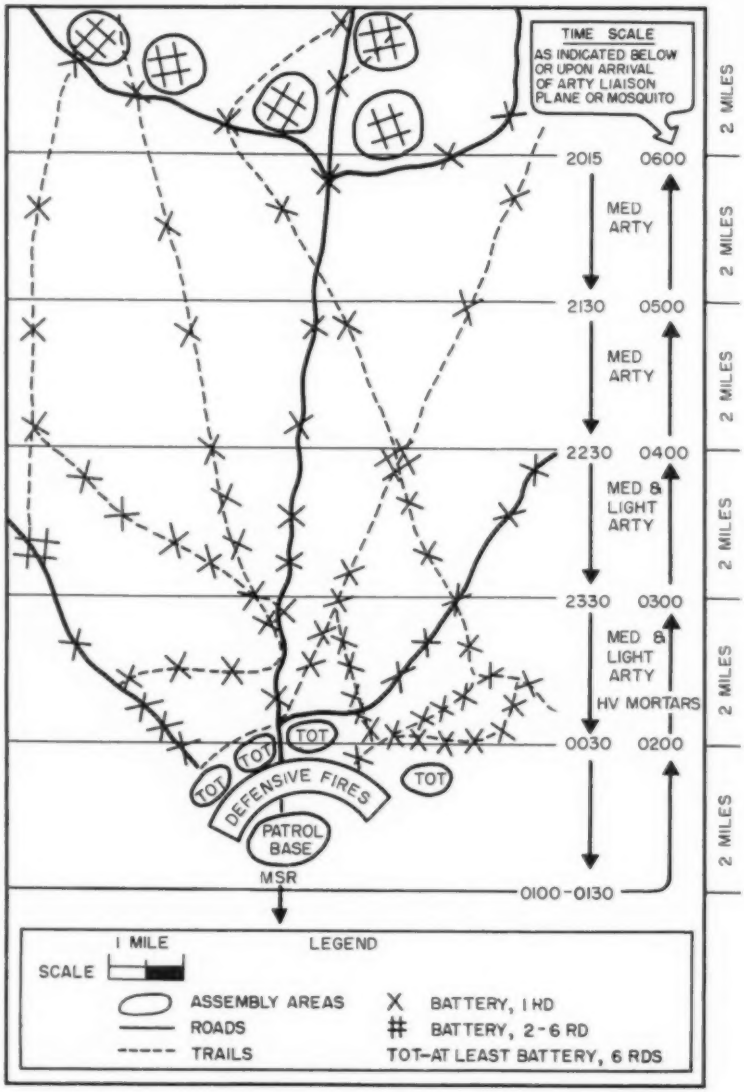


Figure 3. Fire as ambush.

intermittently on the north half of the perimeter.

After H-Hour, the fan opened again to hit the withdrawing enemy.

Caught at night in this fire ambush, the enemy found himself in an unenviable position. He must either pursue his present plan now and run the risk of becoming disorganized and delayed or he could change his plans and lose the initiative.

Our reconnaissance aircraft and local security force reported that the enemy had organized an attack, which had been dispersed by our fire before it could be developed. The 7th Infantry accomplished its withdrawal successfully.

Again in the same month the 7th Infantry successfully used this technique to capture and hold the pass at Sakso-ri. It was necessary to take this pass in order to stop the Chinese offensive on the flank of 10th Corps. The 7th Infantry was given the mission of halting the Chinese offensive by occupation of this key feature.

While the rest of the Regiment engaged the enemy forces, the 1st Battalion moved in a wide sweep behind them and succeeded in taking and holding Sakso-ri Pass, 15 miles behind enemy lines. For the enemy the situation was critical. To regain the pass, he committed a North Korean battalion to an attack from the north, to be coordinated with a Chinese attack from the south.

Combat intelligence, including signal intelligence, as well as personal observation made it clear to the 1st Battalion Commander that the attack would come at about 0200 hours.

Throughout the daylight hours of D-Day minus one, small groups of enemy could be seen infiltrating into assembly areas. These assembly areas were kept under observation, but were not fired upon. Just before nightfall, Time on Target concentrations were fired on all known enemy assembly areas. Intense and progressive artillery fire was placed on the enemy's routes of approach. The fires were moved up on a time schedule. From 0100 until 0230 probable enemy forward assembly areas were pounded. Disorganized and beaten, the enemy never reached the battalion's defensive positions.

The same routes and assembly areas were hit again on a progressive time schedule as the enemy withdrew in confusion. The remainder of the regiment joined the 1st Battalion the following day at the pass at Sakso-ri. Ambush by fire had not only disorganized the enemy, but had taken the initiative from him. On the same day, the enemy began retreating from this vital area.

The technique and situations described are only pointers to show how fire power can be used as a maneuvering force, or in the place of such a force. Success or failure may rest on whether the Infantry leader thinks aggressively, uses imagination and makes the maximum use of the means available to him.

Many times in history a superior force has been defeated through lack of inventiveness. "They came on in the same old way, and we sent

them back in the same old way," said the Duke of Wellington of the French army he destroyed at Waterloo. Time and again Napoleon's massed columns of attack had failed to break the British Infantry squares, but obstinately he refused to change the technique that had been successful against other European armies. Failure to find a new technique to meet a new situation cost the French Emperor his final defeat.

Our problem is not that we don't have enough weapons; nor is it that the weapons we have are not good enough. It's time, I feel, that we should stop yelling for more and really learn to use the weapons now at our disposal.

Publication of this article is not necessarily to be interpreted as reflecting the thought of The Infantry School or THE INFANTRY SCHOOL QUARTERLY.

Infantry

Ever hear of a hoplite? No, it's not a new type of plastic, but just another word for Infantryman. Armed with pike, short sword, and shield, the hoplite was the backbone of Alexander the Great's army. This was the man who defeated every army in the ancient world, marched through Egypt and Persia, invaded India, and made possible an empire that the world still remembers.

Both tactics and weapons have changed considerably in the last 2,000 years. The hoplites went into battle in a tightly packed formation of four thousand men, called a phalanx. Each man occupied a space three feet square. Maneuver was limited to a few drill-like movements, and the only possible attack was the frontal assault. Today, we place a great deal more reliance on the individual Infantryman, armed with rifle, bayonet, and grenade. Unlike the hoplite, he can deploy, maneuver, and fight on any kind of terrain.

But the mission of the Infantry has not changed. Hoplite and rifleman, musketeer and grenadier, all Infantrymen through the long pages of history, have had the same job: to close with and destroy the enemy. Cavalry supported the hoplite and protected his very vulnerable flanks; armor, artillery and air power support and protect the American rifleman. New techniques, new weapons are discovered, have their day, and are replaced by others still newer; but the Infantryman remains. He cannot be replaced. All other arms exist only to help him do his job. The Infantry, now as always, is the Queen of Battle.

— PFC Norman S. Poser

Operations Made Easy

LT ALFRED A. PABST

Two simple, but helpful, aids for the S3

ANY one who has ever been a battalion S3 on maneuvers or in combat knows that he frequently operates under the most adverse conditions. No matter what the situation is, his section must turn out orders and overlays that are timely, complete and accurate. The S3 must use ingenuity and all available resources to develop methods of facilitating his operations.

Experience of the 1st Battalion, 16th Infantry Regiment, indicates that the Operations Locker* (Figure 1) and the Portable Operations Board* (Figure 2) described in this article can greatly assist the S3 to accomplish his job — quickly and well. What's almost as important, these two items can be made locally at a minimum of cost and will carry almost all the gear essential for continuous field operations.

Before discussing these suggested pieces of equipment in detail let us analyze the problem of operations on a battalion level. The S3 has two general problems. One is posed during static situations when operations are carried out from the confines of a CP tent, an over-sized foxhole, or a bunker. The other is trying to operate during a moving situation (either on foot or in a jeep). If the S3 has the equipment suggested in this article he will be able to cope with both problems efficiently. To show how this is done we must study each type of situation and the equipment used in each case.

First, in the static situation, the S3 needs an operations map and his operations equipment, as well as a place to store the equipment when it is not in use. To satisfy these needs the Operations Locker has been developed. The Operations

* Developed by Major Carl J. Helton and SFC William B. Burdine.

Locker is approximately the same size as the standard government-issue footlocker (32" wide, 20" high and 12 inches deep). (See insert on Figure 1.) Thus the Locker fits into the one-half-ton trailer or CP truck and is easily handled by one man if necessary. It has a carrying handle at each end to aid in the movement of the Locker. It is made of plywood, which keeps the weight of the Locker down to a minimum.

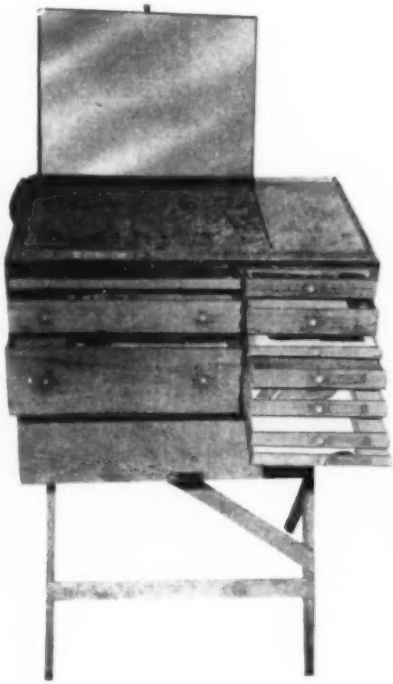


Figure 1. Front view of Operations Locker with drawers open and hinged acetate sheet up. Insert shows side view and dimensions.

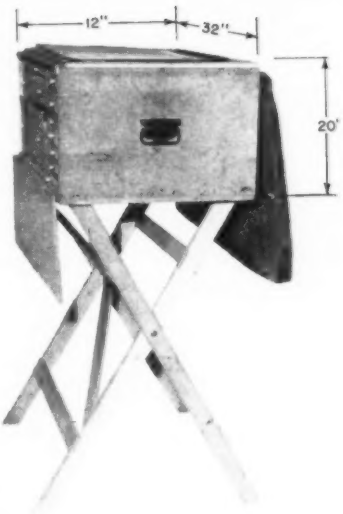


Fig. 1. (Insert)

The front of the Operations Locker is hinged at the bottom. When the front is dropped, ten drawers are revealed. The drawers on the right are sectionalized and hold numerous articles which aid in preparation of operations orders and overlays.

The upper drawer on the right is partitioned so that it can house the tools needed in S3 work. Articles such as mechanical grease pencils for making changes on the acetate-covered map, lead pencils, ballpoint pens, erasers, thumb tacks, scotch or adhesive tape, paper clips, a midget stapling machine, and a message book are placed in this drawer.

The next drawer down contains a supply of onion-skin carbon paper "loads." A "load" is eight sheets of onion skin interspaced with seven sheets of carbon. This "load" is clipped together with staples to keep the papers in place. When it is desired to reproduce an overlay, the overlay is clipped into the "load"; by tracing with a ballpoint pen, eight copies can be made in a very short time.

When the S3 is operating under adverse conditions, these "loads" eliminate the necessity of handling carbons and paper and prevent slippage of any of the papers. A number of these "loads" can be prepared before entering an operation, and "loads" can be resupplied during quiet operational periods. The ballpoint pen, onion skin and carbon paper method is the best means of reproducing a limited number of overlays on which many details are to be shown. (Example: the battalion coordinated fire plan overlay.) An overlay order or a fragmentary order with a strip map can be written out rapidly on one of these prepared loads. Overlay paper cut to this size and substituted for onion skin paper produces an even better set of overlays.

The third drawer contains a supply of cut overlay paper. The recommended size of this paper is 8½ inches by 13 inches, so that it may be used in the preparation of either typed or longhand overlay orders. These overlay orders may also be reproduced by using a "jelly roll."*

The fourth drawer contains a file of orders issued by the headquarters and overlays received from higher, adjacent, and supporting units.

The fifth, sixth and seventh drawers contain suppliers of carbon paper, typing paper, and second sheets necessary to sustain the unit in its operations. A protractor used for measuring azimuths on the map can also be kept in one of these drawers.

The long drawers on the left are also used for storage. The first drawer contains a number of clear sheets of acetate. On one sheet may be placed all the 105-mm artillery concentrations available to the battalion. This sheet is "ticked" in two places with coordinates from the situation map; all the artillery concentrations are put on the sheet in grease pencil. Another sheet can be used for the fire plan of the weapons and disposition of troops of the battalion. A third sheet can be used for counterattack plans. On the fourth sheet can be shown routes of withdrawal or routes planned for the forward movement of the reserve company, depending on the situation. Having the information on these various sheets allows the S3 to keep his situation map as clear as possible. Yet, should any of the information contained on one of those sheets be desired, it may be readily placed on the situation map by matching up the "tick" marks.

With the information on acetate, the S3 can still plainly see the

* "Jelly Roll" is another name for the hectograph, a copying device found in battalion and regimental drafting kits. The orders are transferred to a roll of gelatin; then copies can be run off the gelatin.

situation map beneath. This is a great advantage over having the information on overlays which are not perfectly transparent and, therefore, obscure the view of the S3 when he places them on his map. Any combination of sheets can be placed on the situation map at one time. Thus the 105-mm artillery sheet and the battalion weapons fire plan sheet could be placed on the situation map by the assistant S3 at the same time in order to coordinate the two plans. It is recommended that a different color be used for each sheet. This will help to make each sheet stand out when it is placed on the situation map.

The second drawer on the left can be used for storing such items as flashlights and candles. A self-illuminating magnifier device might be kept in this drawer if one is available. Miscellaneous items required for operations may also be stored in this drawer.

The bottom drawer on the left side contains more bulky items such as the "jelly roll," extra maps, roll of overlay paper, pertinent field manuals, and extra message books. Also a can of lighter fluid and a rag may be kept here. The purpose of these is to wipe grease pencil marks off the acetate.

On the top of the locker is a space for the map of the area of operations. The map is thumb-tacked to the top of the Operations Locker. Two sheets of clear acetate are permanently hinged to the top of the Operations Locker by means of masking tape or adhesive tape. A tape border surrounds the two sheets of acetate to keep them more rigid and from tearing. One sheet may be rotated forward on its hinge and thereby cover the map. The situation may be placed on this sheet of acetate by the S3. As each overlay comes in from the companies, the S3 can place it on the map, drop the first sheet of acetate and place the information from the overlay on this sheet of acetate using a grease pencil. The second sheet of hinged clear acetate can then be rotated forward covering the map and first sheet of acetate. This second sheet of acetate has two purposes. First, it protects the sheet containing the situation. Second, and more important, this sheet can be used by the S3 and commander for making future plans or altering the present plan. It allows the commander and the S3 to see the map and the situation and to write without marring or destroying the situation which is written on the other sheet. A new order may be written on this sheet with its overlay, all in grease pencil; and the operations sergeant can take the information and reproduce it with ease. Since these two acetate sheets are hinged to the top, they may be lifted and dropped back any number of times without changing their position relative to the map.

The map board is hinged to the forward top edge of the locker and can be propped in a vertical position if the commander wishes to use the situation map for orienting the staff and company commanders.

The space on the right of the operations map on the top of the Locker may be used to place current orders or overlays which are desired to be immediately available.

Figure 2. Operations Board with lid up. Dimensions shown.

A clip can be used to hold these papers in place.

The Operations Locker will not delay the movement of the CP. In fact, it will facilitate the movement! All loose items are replaced in the drawers, the drawers are closed, the front is pulled up and locked (thus securing the drawers) and the canvas cover is pulled over the top. The Locker is then lifted off its stand and placed in the jeep trailer, and its stand is collapsed and placed on top of the locker. In a matter of seconds all equipment is secure and ready for future operations.

The Operations Locker solves the static operations problem, but how about the fast-moving situation that requires orders and overlays to be made in a hurry without the "comforts" of a CP? The portable Operations Board is an excellent solution. This Board is one and one half inches thick, two and a half feet wide and twenty inches deep. It weighs less than ten pounds, fully loaded, and contains all the materials necessary for fast but accurate reproduction of overlays.

Looking inside the Portable Operations Board, we find that it is also sectionalized. There is a place for the following items inside. First, the tools necessary for reproduction and operations: grease pencils, lead pencils, thumb tacks, a small vial of lighter fluid and a rag, a straight edge and eraser. The Board also contains a supply of "loads" as previously described, as well as extra paper and carbons. Additional maps or a small roll of overlay paper can be placed in the long space on the near side of the board.

Mimeographed five-paragraph operations-order forms can be made up for various situations. For example, a mimeographed defense-order form (or attack-order form) containing, in addition to the five numbered paragraphs, space for such items as priority of work, signals to fire the FPL in each sector, and other details of the defense order would be put on the form. This form would be used by the S3 and commander in making a quick but complete defense order. The idea of the form is to set down the paragraphs in proper sequence so that the S3 and Commander will merely have to "fill in the blanks," to make up a hurried but complete combat order for his subordinates.

On the top of the Board is placed the situation map in exactly the same manner as it was placed on the Operations Locker. Hinged to the back of the top is one sheet of acetate which covers the map when it is rotated forward. This also works in the same manner as the acetate that is hinged on the Operations Locker. In a fast-moving situation, the S3 can place the overlay from higher headquarters on top of his map, pull the sheet of acetate down on top of it, and make his own overlay in grease pencil on the acetate. The operations sergeant then copies this overlay by putting a sheet of overlay paper on top of the acetate. With this copy he can quickly reproduce overlays using the "loads" contained inside the Portable Operations Board.

This precision method of reproduction can be performed anywhere. One of the most used methods of employment involves placing the

Portable Board on the hood of the S3 jeep, since it makes a convenient table. Or the Board can be placed on the ground, and in the event of rainy weather a poncho may be spread over the operations sergeant and his Board.

To protect the Board when it is being carried, a piece of canvas may be fitted. The canvas is nailed to the bottom and zippered or buttoned around three sides of the Board. A canvas carrying handle is sewn on the top and bottom pieces of the canvas case to aid in carrying and to keep the Board together when it is not zipped.

In a static situation the Portable Operations Board can be placed on an issued folding table and used by staff members for planning purposes or when studying the situation map. Until the Operations Locker is set up, the situation map may be kept on the Portable Operations Board.

The principle of the Portable Operations Board may be adapted for use by Fire Direction Center personnel to help them in performing their mission.

The Portable Operations Board and the Operations Locker provide an excellent solution to many of the problems of the S3 insofar as operational planning and reproduction are concerned. We found them successful and think you will, too.

* * *

Major Helton, the co-developer of the two operation aids discussed is presently a student in The Infantry Officers Advanced Course here at Fort Benning. In discussing the Operations Locker he said, "We used the same Locker for over a year in the field. If they are ever mass-produced, it would be advisable to construct them of light metal, except for the map board portion, which must be of some softer material capable of holding thumb tacks."

Change of Address

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From Musket To M1

MaJ Edgar R Fenstemacher
Lt Eugene R Webb

—TERRY

The Infantry's rifle is the result of many years of work. Here's the story . . .

THE M1 is the best military rifle in use by any army in the world. Every one of its features — its accuracy, simplicity, smoothness of operation, semiautomatic firing, strength — is the result of years of experiment as well as the ingenuity and genius of dozens of men.

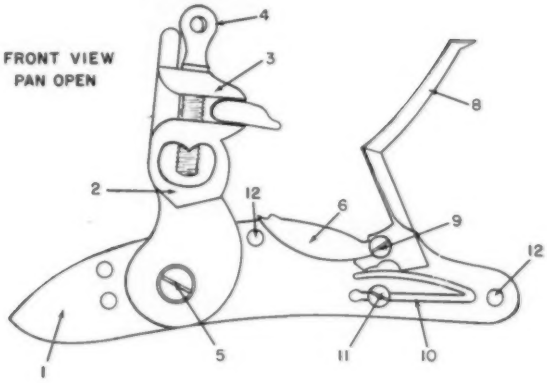
Picture yourself as an Infantryman in General George Washington's Continental Army. Your weapon would probably have been the flintlock, great-granddaddy of the M1. To load, you would have taken a prepared cylindrical paper cartridge, bitten off the end containing the powder, set the hammer of the musket at half-cock, tilted the steel frizzen (see Figure 1) forward to uncover the pan, and poured in about ten grains of powder for a primer. Then you would have closed the pan by lowering the frizzen, poured the rest of the powder down the muzzle, rammed the ball on top of the powder, crumpled the paper, and rammed it down on the ball to keep it from rolling out if the barrel should be lowered below the horizontal.

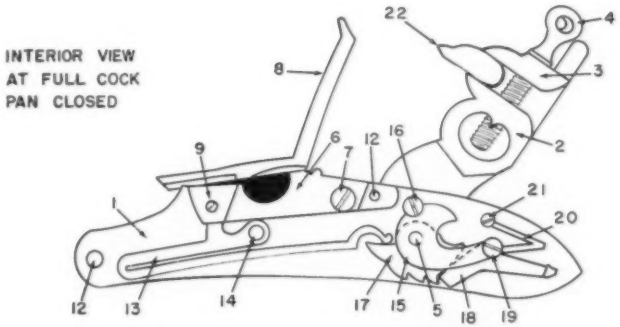
All this to load one round. No wonder that in 1776 Benjamin Franklin seriously suggested adopting the bow and arrow in place of the flintlock musket. Franklin reasoned that a soldier could fire four arrows for every bullet, eliminate smoke, and hurt the enemy more when you hit him.

A flint was issued with each twenty rounds and was clamped in the hammer. To fire, the soldier cocked the hammer, took some kind of aim (there was no rear sight), and squeezed the trigger. As the hammer fell, the flint struck the frizzen, tilted it forward and uncovered the pan, and at the same time threw off sparks. The priming charge ignited; fire flashed through the touchhole setting off the main charge.

It's no surprise that the fire power and accuracy of the continental troops left something to be desired. At the Battle of Long Island, for example, the British waited until the Americans had fired, and then charged successfully with bayonets while our troops were going through the arduous process of reloading.

When the war began on Lexington Green in 1775, our army was pitifully short of shoulder weapons. Those we had were of all conceivable makes and descriptions. Many were imports from France, Spain and Holland and some were owned by individual soldiers, the products of local gunsmiths. "Committees of Safety" were set up in each Colonial division; they procured everything available from gunsmiths and contracted for more. But the specifications were not detailed and we fought the war with a motley as-





A TYPICAL U. S. MARTIAL FLINT LOCK

1 LOCK PLATE	12 SIDE SCREW HOLES
2 HAMMER	13 MAIN SPRING
3 CAP	14 MAIN SPRING SCREW
4 HAMMER SCREW	15 BRIDLE
5 TUMBLER SCREW	16 BRIDLE SCREW
6 PAN	17 TUMBLER
7 PAN SCREW	18 SEAR
8 FRIZZEN	19 SEAR SCREW
9 FRIZZEN SCREW	20 SEAR SPRING
10 FRIZZEN SPRING	21 SEAR SPRING SCREW
11 FRIZZEN SPRING SCREW	22 FLINT

Figure 1. Firing mechanism of the flintlock.

sortment of rifles and muskets, many of them obsolete.

After the war, the government saw the need for a standard shoulder weapon. A National Armory was established at Springfield, Mass., and in 1795 (Figure 2) the first standard Infantry arm, a musket patterned after the French model of 1763, was manufactured. It was caliber .69, smooth bore and took a 16-gauge one-ounce ball. The musket was 59½ inches long. It weighed 8 pounds, 14 ounces. This weapon, with some improvements, was used for almost 50 years. It was manufactured by private firms, as well as at the Government Armory at Harper's Ferry, Virginia. Though "standard," it had by no means the present-day degree of interchangeability of parts.

In 1807 a Scots Presbyterian clergyman, Rev. Alexander John Forsyth, working under a British government commission in his laboratory in the Tower of London, discovered he could ignite gunpowder by a sharp blow on fulminate of mercury. But it takes time for even the most ingenious invention to be developed into a practical device, and it was not until 1842 that the British Army seriously considered using the percussion cap.

Just as the first automobile resembled the horse drawn carriage it replaced, so did the first percussion-cap weapon, Model 1842, (Figure 3) resemble its predecessor, the flintlock. It was still .69 caliber, smoothbore, almost five feet long, and still shot a spherical ball. But the touchhole was extended into a cone over which the firer put a percussion cap to prime the piece. In fact many supply sergeants turned in their Model 1835's to be converted to percussion type weapons which were then reissued to troops. Even so, the Mexican War, which began in 1846, was fought largely with the old flintlocks.

At this point a big question comes up: Why weren't we developing the rifle? Some rifles had been used during the Revolutionary War. As a matter of fact the principle that spiral grooves in the barrel would increase accuracy and range by giving the bullet a spinning motion, had been discovered about the time Christopher Columbus discovered America. Was the Ordance Department of those days asleep? Or was the Army unduly attached to its picturesque musket?

Before we start condemning anyone, let's look at the cold facts Several difficulties stood between the discovery of the principle of the rifle and its practical application. With a muzzle-loading weapon, there were only two ways to make the bullet expand against the rifling. One was to wrap a greased leather patch around it, and the other to pound it in with a ramrod and mallet. Both were too slow for use in battle.

Obviously, the answer was a breech loader. Breech-loading guns were expensive at the time, but they were tried. They had a high casualty-producing effect — on the firers. Hot gases from the explosion escaped at the breech, and the soldier was lucky if he escaped with a pair of singed eyebrows. The breech-loading rifle had to wait for

the development of the metal cartridge.

Meanwhile in France, a Capt Minie solved the problem of getting the bullet to expand onto the rifling. He used an elongated pointed bullet with a hollow cone at its base into which he fitted an iron plug. The plug was driven into the hollow cone by the force of the explosion, and the soft lead expanded against the rifled barrel. It was soon found that the explosion would expand the cone without the iron plug. This was the system that Jefferson Davis, Secretary of War, approved for use by the Army in the 1850's.

The U.S. Rifle, Model 1855, was the result. It was .58 caliber, 48¾ inches long, and weighed about 10 pounds. The percussion caps were built into a tape, very similar to those used in the cap pistols boys play with today. The tape was coiled in a recessed magazine in the lock plate. When the hammer was cocked a toothed wheel pushed a new cap into place. But the powder and bullet were still loaded as awkwardly as during the Revolutionary War.

The tape primer malfunctioned too often, and the new rifle of 1861 went back to the old style, individually-loaded percussion cap. Most of the rifles used in the Civil War were of this model.

But the idea of a breech-loading rifle still haunted the experimenters, the soldiers, and the War Department. The war gave this search an added urgency. It is to Col Hiram Berdan, a famous marksman as well as an inventor, that we owe the self-contained metallic cartridge. This invention made possible an efficient breech-loader. The cartridge had a copper case that expanded when fired and sealed the breech just as the brass case does today. The copper was tempered so that as soon as the pressure of the explosion subsided the case sprang back slightly so that it could be extracted.

The rifle of 1868 was a breech-loader, caliber .50, with a length of 52 inches and a weight of about 9¼ pounds. Five years later an improved model, caliber .45, was put out. This was the same weapon, with the exception of a few minor improvements, with which we fought the war with Spain in 1898.

The next step was the repeating rifle. In 1836 Sam Colt had patented his famous revolver, but when he built his revolving cylinder into a rifle, he was not too successful. For one thing, the flash between the cylinder and the barrel would burn the firer's extended left arm. Even worse, loose powder would get into unintended places during loading, and several cylinders would go off at once, with disastrous effects on the firer.

The invention of the metallic cartridge and the substitution of a magazine for the revolving cylinder made the repeating rifle safe, but another formidable difficulty presented itself. A rifle shooting half a dozen or more rounds of .45 caliber ammunition was too heavy and cumbersome for practical use.

The answer came in 1884, with the French invention of progressive-burning smokeless powder. The increased muzzle velocity allowed for a smaller projectile and a small-

Figure 2. Flintlock musket — 1795.

Figure 3. Percussion musket — 1842.

Figure 4. Krag-Jorgenson Rifle — 1892 .

Figure 5. Enfield Rifle — 1917.

er, lighter rifle. In 1892 the Army adopted the .30 caliber bolt-action Krag-Jorgensen rifle, whose magazine held five rounds.

Another big change came with smokeless powder. As muzzle velocity increased, experiments with lead bullets indicated that they were too soft and were easily stripped by the rifling. The problem was solved by encasing the bullet in a cupro-nickel jacket, which was harder but still soft enough to take the rifling. Now the pitch of the rifling could be increased to make the bullet spin faster and give it increased stability in flight.*

But the Krag-Jorgensen rifle (Figure 4) was not the final answer. Its muzzle velocity of 2000-feet-per-second was still too slow. The magazine, which projected awkwardly from the side of the rifle, had to be loaded slowly and paintakingly with loose rounds. The rimmed cartridge took up too much magazine space and frequently malfunctioned.

In 1900 a Board of Officers met to test a more suitable rifle. The result was the adoption of the famous "Springfield," or M1903. The bolt-action mechanism was a modification of the German Mauser ($200,000 were paid for the manufacturing rights). The rifle was loaded with a 5-round clip while a sixth round could be chambered separately.

In 1906 an improvement in the ammunition increased muzzle velocity from 2300- to 2700-feet-per-second. The bullet was changed from 220 grain round-nose to 150 grain sharp-point, and all rifles were recalled to undergo chamber modification. Thus we have our present .30-06 ammunition — .30 for caliber; 06 for 1906, the year of adoption. The bullet, primer and powder have all undergone changes since then, but the case size has remained the same.

The M1903 was good — so good that it remained our standard rifle for almost forty years. The U.S. Rifle Model 1917 (Figure 5) known as the Enfield, was very similar to the M1903. In 1917 we were not tooled up to produce the huge numbers of Springfields required for our armed forces, so manufacturers modified the rifle (Enfield) they had been building for export to Britain to handle American ammunition.

Meanwhile the search for a better weapon went on. In the 1880's Hiram Maxim had invented the first true machine gun. But some serious difficulties lay in the way of applying the principle of automatic or semiautomatic fire to a rifle.

There are several ways by which the power of the exploding cartridge can be used to extract and eject the cartridge, cock the weapon, and feed and chamber a new round. Simplest is the blowback method, used by most .22 self-loading rifles and our M3 Submachine Gun. This method could not be used with a high-powered rifle. Our .30 caliber cartridge develops a chamber pressure of 50,000 pounds per square inch when fired. A breech-

* Cupro-nickel, because of its tendency to foul barrels, was discarded as a jacket material shortly after World War I. Guilding metal, a copper-zinc alloy, was adopted. During World War II, to conserve copper and zinc, the alloy was plated over steel.

lock weighing slightly less than 27 pounds would be required. In addition, the experimenters could find no way to lock the breechblock or bolt securely to the barrel until the tremendous pressure subsided.

Less powerful cartridges were tried. In 1932 a caliber .276 gas-operated and semi-automatic rifle was offered for possible adoption, but was disapproved by the Chief of Staff of the Army, General Douglas MacArthur. If we were to keep a flat trajectory and retain real hitting power, we would have to stay with the powerful .30 caliber round.

Finally, in 1936, a civilian employee of the Ordnance Department named John C. Garand gave the Army the rifle it had been looking for. By the time the enemy struck at Pearl Harbor, the M1 had pretty well replaced the M1903. Many people have the erroneous impression that Mr. Garand made a fortune from his rifle, but actually the government bought one of the greatest bargains of all time in the M1. Garand spent 16 years developing the weapon, at $3,500 a year.

The M1 is a caliber .30, gas-operated, semi-automatic rifle, firing an 8-round clip. It has proved itself on the battlefields of World War II (and in Korea) and is still the best military rifle in use. By VJ-day over 4,000,000 M1's had been manufactured, and it is estimated that more shots were fired from the M1 during World War II than were fired from the M1903 in its whole history.

What makes the M1 so good? For one thing, its ability to keep firing under all conditions. Any soldier who disagrees with this just doesn't know how little the M1 asks. Keep the chamber clean and put a little rifle grease on the four places indicated by the Field Manual and the rifle will shoot.

In 1943 the Germans brought out a semi-automatic rifle they called the Gewehr 43. This rifle failed every abuse test we require the M1 to pass. The Russians have a semiautomatic rifle called the Tokarev 40, which is very similar to the Gewehr 43.

The M1 is accurate. The rear sight is the easiest to adjust accurately that has ever been put on a military rifle (one click of adjustment moves the strike of the bullet exactly one inch for each one hundred yards of range). In the 1952 Wimbledon service rifle match, the winner, using a government-issue M1, put 16 of his 20 shots into a 36-inch bull's eye 1,000 yards away. Nine of them were in the 20-inch V-ring.

The M1 is perhaps the strongest rifle ever built. Ordnance has no record of a receiver ever bursting or of the locking lugs blowing off the bolt. Before it leaves the factory, every rifle fires a proof cartridge that develops a chamber pressure of 70,000 pounds per square inch. Cartridges developing up to 120,000 pounds per square inch have been fired. The only damage was that sometimes the left locking lug would crack.

The M1 is simple. It is probably easier to disassemble than any military semi-automatic rifle ever built. It has fewer parts than the M1903.

Like its predecessors, the M1 has been modified and improved since its adoption. The first M1's had a

muzzle cap with an open space behind the cap communicating with the piston instead of a gas port. The present gas-cylinder assembly, with a gas port drilled in the barrel, was adopted in 1939.

The rear sight has been changed. Recoil loosened the elevation mechanism, so a method to lock the sight in place after adjusting was provided. When the jumping problem was solved, the sight was redesigned with the locking feature removed.

Other modifications, most of them minor from the standpoint of the Infantryman, have been made. It was found that a compensating spring which fitted around the follower rod could be eliminated if the claws of the follower rod were lengthened. Then it was found that it would be cheaper and more efficient to rivet the claws onto the follower rod instead of machining this part out of one piece of metal. The fact that the M1 has not undergone more radical modifications is a tribute to the genius of Mr. Garand's design.

However, the search for still better weapons goes on. One of these was the T 20 E 2, which resembled the M1 very closely. It fired from a 20-round detachable magazine, and by means of a change lever could be switched either to automatic or semi-automatic fire. But many believe that it is not necessarily desirable to have a rifle that fires automatically in the hands of every rifleman. For one thing, it would create a major ammunition supply problem. And unless the rifle had a bipod and a heavy barrel, it becomes extremely inaccurate.

The Army at present is considering three different rifles that fire both automatic and semi-automatic fire. They can be used with a bipod and heavy barrel, to replace the BAR; or with a light barrel, to replace the M1. It is doubtful, though, whether any of them can be made light enough to replace the carbine. An undesirable feature is that they fire from a 20-round detachable magazine; carrying ammunition in magazines adds extra weight to the soldier's load.

All these rifles fire the new T65 round. This ammunition is .30 caliber and ballistically similar to the present-day round. But because it uses improved powder, it is one-half-inch shorter and 10% lighter. The T65 ammunition can go into production when we find an acceptable rifle to shoot it.

The Infantryman is a hard man to satisfy. However good the M1 may be, it is not the last word. We are always looking for a rifle that is still simpler, lighter, more reliable. We want it to shoot smaller, lighter ammunition that has a greater casualty-producing effect on the enemy.

Each new development presents new difficulties that must be overcome. The Infantryman wants more muzzle velocity — a bullet with a trajectory so flat he won't have to make sight changes for range, so fast he won't have to make them for wind. But when you get much over 3000-feet-per-second you run into serious problems, such as barrels burning out too soon, bullets flying apart because of centrifugal force (a bullet fired from an M1

spins at about 211,000 revolutions per minute), excessive chamber pressures required to drive a bullet at such speeds, and numerous other difficulties.

We want a smaller caliber, but we cannot expect that until the problem of velocity is licked. We would like a silencer, but that we will never have. Though the explosion can be silenced, we would have to repeal a law of physics to make a supersonic bullet stop making shock waves that make as much noise as the explosion. We have very little smoke now, but we would like to have still less We would like less recoil, but unfortunately you increase backblast when you hang a compensator or muzzle break on the end of a rifle to reduce recoil.

These are some of the problems. Nevertheless we will have an even better rifle some day. Since 1775 our shoulder arms have developed gradually. Each improvement has led naturally to the next one, and the M1 is only the latest step in that evolution. Just don't expect to be issued Buck Rogers' ray gun the day after tomorrow.

The opinions expressed on development goals are those of the authors and are not necessarily to be interpreted as reflecting the thought of The Infantry School or THE INFANTRY SCHOOL QUARTERLY.

Project "Future"

One of the articles in this issue, "Fire as Maneuver," is the outgrowth of a discussion group organized here at T.I.S. last September. At regular monthly meetings members discuss "ideas" and problems peculiar to tactics and command. In a sense, this group is preparing its members for the responsibilities of higher command by discussion of the problems of today and tomorrow.

The group is a purely voluntary affair similar to one started years ago and attended by such officers as Generals Collins, Bradley, Stilwell and Marshall. All meetings are held in an atmosphere of academic freedom. No one is bound by current thinking and everyone's ideas are carefully considered.

"Fire as Maneuver" is an illustration of one idea that jelled and might possibly influence the thinking of tomorrow.

Forgotten Killers

Capt E R Hindman

Don't lay mines without recording Here's why . . .

THE land mine is a killer — a killer without a brain. It is unable to distinguish between friend and foe. When mines are laid without proper recording, one frequently signs the death warrant for our own forces — and sometimes for himself.

This story is about Korea.

The day I reported for duty to "A" Company, Captain Lumroy, the company commander, personally took me in tow. He led me through his company of combat engineers that were dug in across the road from booming eight-inch howitzers. Then we went to the supply tent to draw my field equipment.

"Sergeant, this is Lt Hindman, just fresh from the states," the captain told Supply Sgt Oliver.

"I think we can fix him up with everything he needs," said the sergeant. "Except a helmet. All we have is the helmet Lt Richmond left here."

I said I don't mind using Lt Richmond's old helmet. Sgt Oliver reached into a packing case and pulled it out. It still had the general shape of a helmet, but was pitted with irregular jagged holes.

"No, lieutenant. I don't think you'll want this helmet. It saved one life day before yesterday, but I think its saving days are over."

I took the riddled helmet in my hands and felt some of the ragged edges of metal.

Captain Lumroy must have seen the question in my eyes. "Don't let the sight of that thing bother you too much," he said. "Richmond was luckier than some. He's still alive. They tell us he will be okay as soon as they get all the pieces of that mine out of his skull."

"Mine? How did he set off a mine with his head?"

"It wasn't his head," Lumroy explained. "He set it off with his foot, but the mine jumped to the level of his head before it exploded. It was one of our M2A3 bounding-type mines. Oliver, go get me one of those bouncing Betties* from the mine dump."

I was bewildered. "We had some training with those bounding mines at Fort Belvoir. But how come Richmond was in our own mine field?"

Lumroy lit a cigaret and sat down. He had the appearance of a man with an unpleasant task ahead of him.

"You may as well know what's in store for you. Here's the story. We combat engineers always get our share of the dirty work. Only now we've got the dirtiest job I've ever seen."

---

* The term "bouncing Betty" originally was applied to the German mines.

He paused and looked at me. Then he went on deliberately.

"The line in this sector is a line without depth. Corps realizes this and has ordered blocking positions built up to add some strength. There's only one good location to put in a block. American troops occupied that area about four months ago and spread mines all over it.

"They made no records, only a few sketches which are just about impossible to interpret. Richmond's job was to clear those mines. Tomorrow you take over where he left off. You'll be in charge of 18 men, all volunteers from the company. They've had five days' experience in this clearing work.

"The commander of the unit that put in those mines should be court-martialed for letting things get out of his control. He made no effort to record the number of mines issued to units in his command or the exact positions of those mines. Now we've got to go in and clear out the mines the best way we can. And men like Richmond get wounded or killed because of somebody else's mistakes."

Sgt Oliver returned with an M2A3 and handed it to Captain Lumroy, who passed it to me. "You'd better learn as much about this thing as you can today. You'll want to know exactly what you're doing tomorrow. You'll work only four hours a day, two in the morning and two in the afternoon. That doesn't seem like a long time but every step you take may be your last. Don't get me wrong though, I'm just trying to warn you to use caution. Take Oliver's helmet until we can get you one. Now let's go over to the CP and dig out a field manual on American mines."

My first day with the company was turning out a bit differently than I had expected. When the captain left me, I sat down to do some concentrated homework, with a dog-eared copy of FM 5-31, Land Mines and Booby Traps. When I got up an hour later, I knew a little more about our bounding-type mine.

I knew that the M2A3, or "bouncing Betty," will cause casualties to most personnel within 10 yards of the point of explosion. Its flying fragments are dangerous up to 150 yards. It has an older sister, the M2A1, the only difference being that the A3 has a smaller base and is waterproofed. (Figure 4.)

The mine is simply a tube that is capped and mounted on a base. It contains a mortar shell which is thrown into the air by a propelling charge in the base of the tube. The shell is exploded, when 6 to 8 feet in the air, by a 1/200-second delay fuze.

Several different fuzes can be used to set off the mine, but the most popular is the M6A1, a combination pull and pressure fuze. A ten- to twenty-pound pressure on the three prongs or a six- to ten-pound pull on the pull ring will operate the fuze. Flame to ignite the propelling charge is transmitted from the fuze through a small flash tube which is part of the mine body.

When the mine and fuze are buried so that the top of the mine is flush with the ground and the three prongs of the fuze project just above the ground, the mine is very hard to detect. Since the trip wires are almost invisible, the

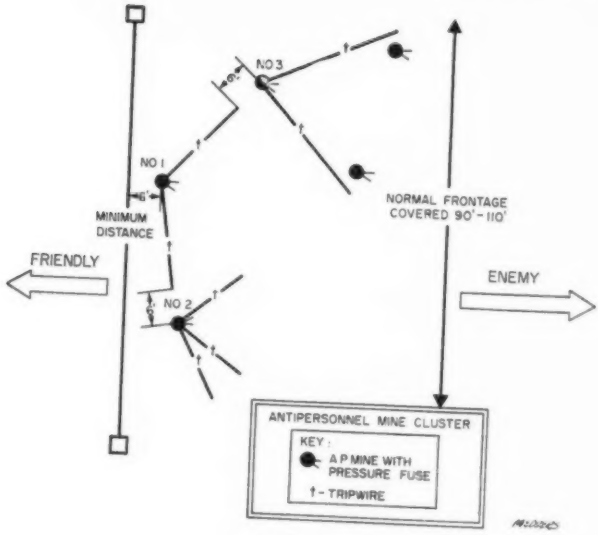


Figure 1.

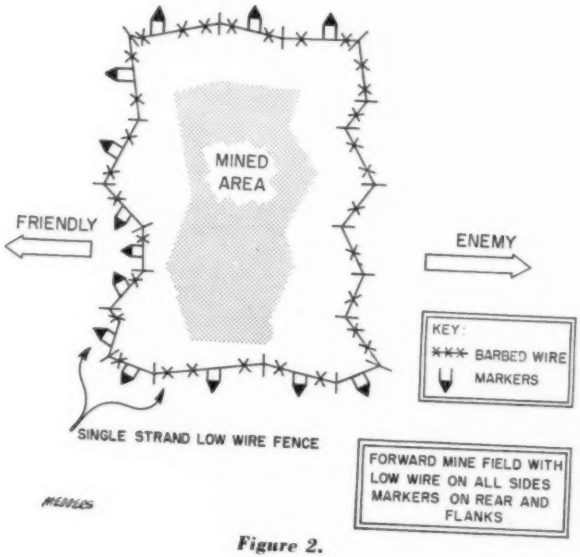


Figure 2.

mines cannot be removed safely without an accurate chart showing exactly where they are laid.

Feeling a little more prepared for my new job, I went back to the CP and checked in with Captain Lumroy. He handed me a small sketch. It looked like a pirate's chart of buried treasure.

"Here's the only drawing we have of the mined area. We don't have time to ride up there this afternoon, but your NCO in charge, Sgt Young, knows the exact limits of the field. He tells me there is a standard mine marking fence on at least three sides. That gives you a lucky break.

"Now take a look at this sketch. Bad as it is, it's still better than some we've had to work from. The character who plotted this field used a hilltop as a reference point when he took an azimuth to locate his right-hand reference stake. If my guess is right, that hilltop is a good thousand yards from the reference point.

"Whoever laid this field probably didn't even know that reference points should be accurate permanent landmarks — a road junction will do. And if the reference point is over 200 yards from the mine field, intermediate markers must be used at 200-yard intervals. They could have used anything as an intermediate marker. A couple of pickets driven into the ground with barbed wire wrapped around the top, or a metal can partly buried in the ground would have done the job."

Captain Lumroy's talk showed me one thing. I had more studying to do — this time on how to use antipersonnel mines and record their position. I dug out another reference* and went to work.

These mines are normally laid in clusters of three. The cluster forms a triangle with one side parallel to the front and the apex pointing toward our own lines. (Figure 1.) The mines are laid in relation to a reference line which is on the friendly side of the mine field. (Figure 2.)

The number one mine of the cluster is at the apex of the triangle. It must be at least 6 feet away from the reference line. Number two mine is placed in direct prolongation of the extreme right trip wire of mine number one and exactly six feet from the end of the trip wire. The same applies for mine number three, this time along the extreme left trip wire.

So at least two trip wires must be used on the number one mine in each cluster. The trip wires should be 10 to- 26-feet in length, so that all of the wire will be within casualty-producing radius of the mine. There are two important "don'ts" to remember here. No trip wire should ever be pointed toward the reference line, that is, toward our own forces; and no two trip wires should ever cross one another. That may have been how Richmond was wounded. He may have been following one wire to its source and tripped on another wire crossing the one he was tracing.

A marking fence of a single strand of barbed wire about 18 to 24 inches off the ground should completely surround the minefield.

* The author has for the purposes of timeliness and accuracy used DA Training Circular No. 34, 14 Nov 52. This circular was not in existence while he was in Korea.

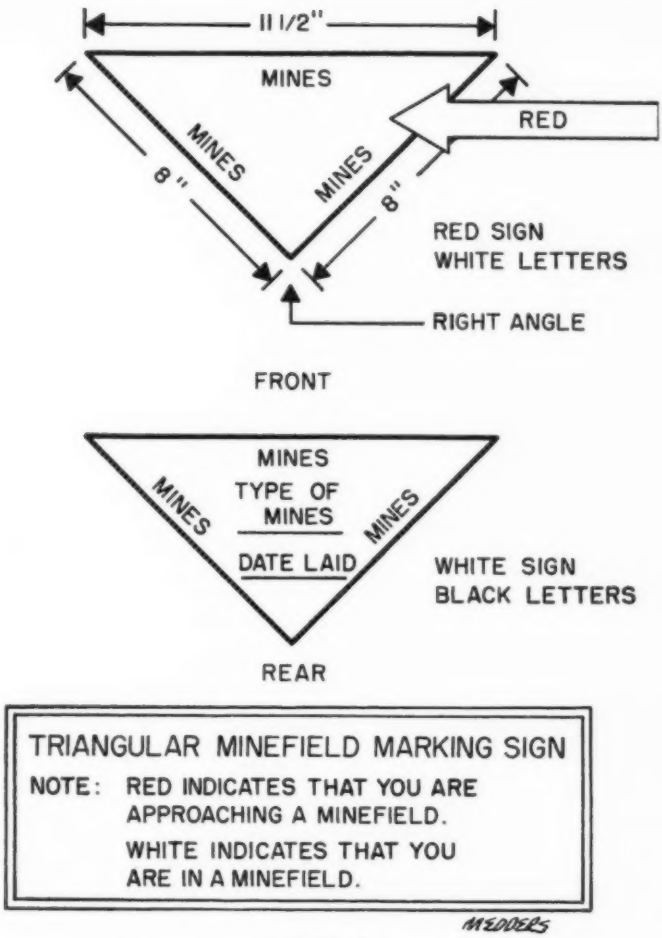


Figure 3.

Standard triangular contamination markers should be placed on the flanks and friendly side of our most forward fields. All sides of the fields within our lines should have the markers. The red portion of the markers should be pointed away from the field. These are simple safety precautions. If they are adhered to, our forces are in no danger of being hurt by our mines. (Figure 3.)

Sleep didn't come easily that night. Before I finally dozed off, I had decided how I would handle my assignment of the next day. I probably wouldn't be able to rely too much on the records Captain Lumroy had given me. We would have to feel our way into the mine field to determine what pattern, if any, had been used. We could start by using a grapnel to set off any mines that lay near the edges of the field. By analyzing the location of these mines, we might be able to see the pattern of the minefield.

The grapnel didn't help us next morning. When we reached the mine field, we found the ground covered with a 4-inch layer of partially frozen snow. The three-pronged grapnel, pulled by a lightweight rope, skidded and bounced over the snow without catching a single wire.

Sgt Young and I then decided to try an experiment. We lined our 18 men up along the boundary fence of the mine field and told them to examine the area visually and try to locate at least one M6 fuze which might be poking out of the snow. Two mines were spotted. After all the men were dispersed, Sgt Young, clad in an armored vest, inched his way into the field, clearing the snow very cautiously from his path, at the same time feeling for trip wires. When he reached the first mine, he disarmed it by inserting a piece of wire into the positive safety hole of the fuze. Then he slipped another piece of wire into the locking safety hole of the fuze and cut the two trip wires leading from the mine. The wires were not taut so he knew that no pull-release device had been used. He repeated this process for the second mine.

Meanwhile, one of our men located a third mine. As he inched forward to disarm it, he walked into a trip wire from another mine, pointing toward our own lines. Luckily, and because he was moving cautiously, he noticed the wire before he put any pressure on it. This trip wire had been laid toward our own lines, contrary to all rules for safe mine employment. It could easily have cost a man's life.

Our sketch indicated no use of pressure-actuated mines, such as our M3 or M14 (Figures 6 and 7) in the field; but we took no chances and checked in the ground for these, too. Instead of using a probing drill to check every inch of the ground, we decided first to find enough mines to determine the pattern that had been used in laying this field. Once we had plotted the pattern, we were able to locate the mines much more rapidly than we would have by visual means alone.

That day we moved through the mine field at a snail's pace. But when the work was finally halted, we still had 18 unharmed men plus 117 mines. There were a couple of near-accidents but no actual mishaps. Once, while I was checking the progress in the left portion of the field, I glanced down and saw a trip wire stretched almost taut across my boot. I followed the wire to its source and uncovered a mine buried in a clump of brush. From then on I abided rigidly by the rule we had set up earlier: "Stay in tracks and stay in health."

After six more days of work we had completed our assignment. By

using extreme caution we had suffered no casualties. In the course of the work we had learned much about the improper laying of antipersonnel mines. Usually, some kind of pattern had been used, but the patterns were too seldom of standard design. Sketches and drawings were inadequate. We had a sketch for one field that was an exact copy of an example in the field manual, but the field itself was entirely different. Apparently, someone had forgotten to make a drawing while the mines were being laid, and had later copied a page from the manual as a substitute.

For another field we had a fairly decent sketch, but on removing the mines we discovered that additional mines had been placed forward of the number two and three mines in each cluster. No record of these additional mines had been made.

In one rather flat area, we were really unorthodox. We exploded 45 bounding mines by running a tank through it. (Not an authorized role for tanks.) We then checked the entire area by walking in the tracks to locate those mines that had not been exploded.

From talking to men doing similar clearing work for other units, we picked up some interesting facts. Along the front our own mines and booby traps had caused an appalling number of casualties, especially in areas just forward of foxholes. When this area had been a fighting sector, any man in a foxhole which he felt was somewhat exposed would increase his own security by placing a mine or a hand grenade set as a booby trap in front of his position. He usually failed to make a record of these mines and booby traps. When he moved out of the area, he often left both in place. Many troops new to the area were killed or wounded by these devices. which ironically had been set out by their own comrades.

In one battalion area (forward of the MLR) a number of casualties occurred to Infantrymen trying to locate mines that were activated by trip wires. To avoid enemy observation (and fire) the members of the P&A platoon were sent out at night with mine detectors.

The area contained a number of unmarked bounding mines with trip wire fuzes as well as many metal fragments. Many of these mines were set off when detectors were swung into trip wires. All of which illustrates the necessity for recording mines.

One of the mined areas had no records made of it at all. No one knew that mines had been placed in the area. A divisional unit of company size was moving into the area when one man tripped a bouncing Betty. Immediately two other men rushed to his aid, and one of them tripped another mine, killing himself and wounding the other. Other personnel tried to get to the wounded men, and more mines were set off. In a ghastly debacle lasting only a few short minutes, a total of 16 men was killed or wounded by our own mines. Each time another casualty occurred, there appeared another kindly but unthinking individual who rushed foolhardily into the danger area when he heard the cries of his buddy. Proper plotting of the field, proper discipline of the

Figure 4. U.S. Antipersonnel Mine A2A3 with M6A1 Personnel Mine Fuze.

Figure 5. Trip wire grapnel.

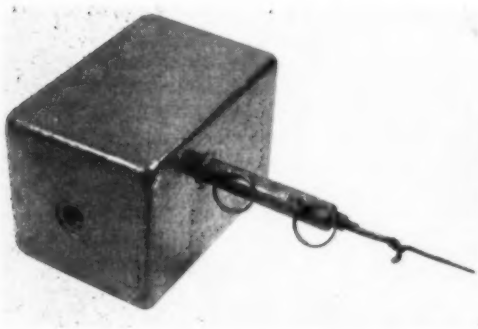


Figure 6. U.S. Antipersonnel Mine M3 with U.S. Pull Fuze M1 (one of two other fuze wells shown).

Figure 7. U.S. Antipersonnel Mine M14.

unit, and cool action on the part of the leaders would have prevented needless bloodshed. How many other incidents, possibly not as serious as this one, have occurred among our units in Korea?

The story of our mine-removal has a sort of sequel. About a week after we had removed all the mines, an Infantry lieutenant dropped into the company on a scrounging mission. He walked up to me and said:

"Look, my platoon's been assigned a sector of the line right under the enemy's nose. We heard that you all had a lot of antipersonnel mines around. How about giving me about 24 to use around my platoon?"

I looked at the lieutenant for what must have seemed to him a

long, slow century. I kept thinking about fingering around in the snow for unrecorded mines. The strain of wondering when one of us would get blown to hell and gone and . . . well, I guess I sort of shocked the lieutenant because I said:

"You're not going to get any mines from us. If your CO wants you to use mines he has to issue them to you."

"But, I. . . ."

"And after you get them they must be laid and recorded according to present doctrine. You have to make certain that ADEQUATE and ACCURATE records of the fields are made."

"Well. . . . That is, we. . . ."

And then I calmed down.

The lieutenant looked at me and asked:

"Why are you getting so damned upset? I just asked a simple question."

So I explained our activities of the past few days. When I'd finished, he realized what the score really was and said:

"I see. No more of this sowing mines like so much grain without a thought of the possible consequences."

"That's right." I said.

"Okay, you sold me," he replied. "And if I do get some, I'll follow your advice."

If he did get the mines, I hope he kept his promise. There is no reason why our own mines should become "forgotten killers."

Read D/A Circular 34, 14 Nov 52

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BOOK DEPARTMENT

The Infantry School — Fort Benning, Georgia

WHAT'S *New!*

The following information provides a means of keeping up-to-date on matters of professional interest.

Currently Under Study

A Modified Elevating and Traversing Mechanism for the Browning MG, Cal. 30, M1919A6. Proposed model includes a wider traversing clamp which is to give the weapon greater stability, better shot groups and eliminates the necessity for holding the gun down during firing. The model includes a slightly different handwheel designed to give more sensitive and accurate control of clicks in mils.

•

"Existence Loads" for Paratroopers. New "existence" loads for paratroopers in vacuum-packed containers. Container will hold a sleeping bag, rations, socks and other necessities. It can be strapped to the paratrooper's body. The proposed "prepacked existence" load eliminates the necessity carrying each item separately, provides the individual with necessities and cuts down loss and breakage.

▪

Anti-airsick Headrest. A new type headrest designed to keep the head from bobbing during flight is being considered. It is hoped that this device will reduce air sickness among individual paratroopers.

•

Muzzle and Breech Covers for Infantry Small Arms. Soldiers have long used socks, rags, etc., as a field expedient muzzle covering. Now under consideration is a standard muzzle and breech cover designed to protect Infantry small arms. It is thought that such covering will assist in reducing malfunctions caused by dirt and water.

▪

Lightweight Air Compressor. At present flame thrower fuel tanks must be taken back to heavy air compressors when recharging is necessary. A proposed lightweight air compressor (60 pounds), capable of being carried by one man, may make it possible to recharge on the spot. If successful it could have the effect of keeping the flame thrower "in action" for longer periods.

•

Manuals

Revised. FM 30-101, *"The Maneuver Enemy,"* was distributed in February of this year. It is a revision of the former manual and supersedes Appendixes I and II of FM 30-102. It contains information on Aggressor uniforms and insignia, conventional signs and military symbols, and Aggressor language.

▪

New. FM 22-100, *"Command and Leadership for the Small Unit Leader,"* is currently being printed. It covers leadership traits, principles and techniques and gives many examples of how to solve leadership problems. Interesting combat examples of small unit leadership are also described.

ARSOF 64-11

Training Circular ( )*, *Combat Formations*, has been forwarded to the printer. This circular prescribes the new formations resulting from the recent addition of a sound automatic rifle to the T/O&E of the Infantry rifle squad. It also eliminates four of the old formations: as skirmishers AR team right, as skirmishers AR team left, one of the squad-column type formations, and one of the platoon-column type formations.

•

Training Circular ( )*, "*Replacement Units*," has been forwarded for approval and publication. This circular spells out doctrine for replacement units organized under T/O&E's 20-52, 20-56 and 20-57. It provides information on the functions and characteristics of replacement units in a theater of operations. It is an effective guide for commander and "personnel" officers responsible for replacement installations and activities, and for personnel assigned to replacement units.

•

Change to Manual

Change 5 to FM 23-65, "*Browning Machine Gun, Caliber .50, HB, M2,*" has been forwarded for approval and publication. This change spells out the safety precautions to be used in the event of "cook-offs," or hang fires.

•

New!

Standard Load for Combat Jumper. An airborne conference was held at Benning last January to determine a standard method of wearing equipment as well as where equipment is to be attached to the jumper's body. As a guide the conferees determined the load must be light and "clean," safe and trimmed to essentials only. With this guide in mind a standard load for combat jumpers was recommended. The recommendation was approved by OCAFF and is now being implemented.

•

Correction

In this column in the April issue (page 54) there appeared an article on the new Recoilless Rifle Platoon. This item erroneously stated that the platoon had "one 75mm rifle section composed of two squads." This should have read "one 75mm rifle section equipped with two 75mm rifles M20." The 75mm rifle section is not broken into squads but is employed as a section.

•

Cancellation and Change

FM 57-10, "*Tactics and Techniques of Pathfinder Troops,*" reported as a new manual in April, was cancelled by the Department of the Army. Air Force rather than Army personnel will now perform pathfinder duties.

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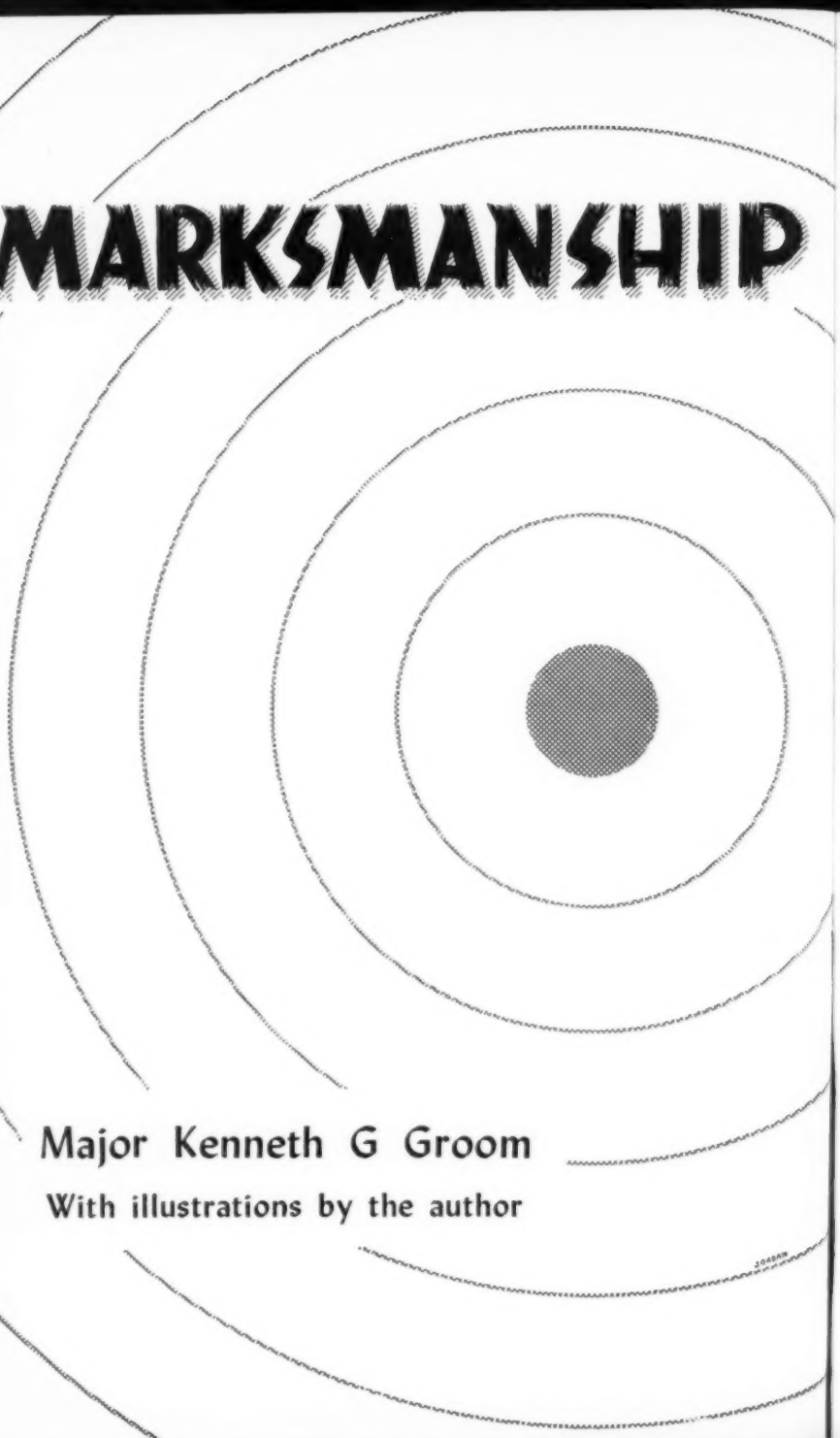
* Number not yet assigned.

MARKSMANSHIP



Major Kenneth G Groom

With illustrations by the author

There's no royal road to good marksmanship. It's a matter of proper training.

"WHY?" That's a question American soldiers have used since the birth of our Army. Soldiers generally, and Infantrymen in particular, always do a better job when their questions are answered and they know WHY they must do a thing in specified manner. This, I believe, is particularly true of rifle marksmanship training. Answer the questions — tell why — and you have a bull's eye instead of a bolo.

As a rifle instructor at The Infantry School, I've had personal contact with 10,000* officers, officer candidates and noncoms. Many of them have erroneous ideas regarding the merits of marksmanship training, and the rifle. Many of these questions are asked time and again. In an effort to clear up these questions and to aid other students (and instructors as well), let's consider some of the more important "whys?"

Case 1. Sighting and Aiming

Lt Able has just received instruction in the first step of preliminary marksmanship training, "Sighting and Aiming." He walks over to me and says, "Sir, when I was at Fort Dix, we used a device** that was plugged into the muzzle of the rifle to teach correct sight picture. Why don't you use it here?"

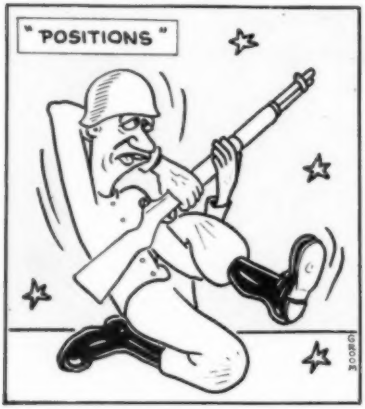
This particular training aid was tested here at The Infantry School and was disapproved for two reasons. First, it is not suitable for teaching the soldier correct sight *alignment* (the most important part of a sight picture). Secondly, it requires plugging the muzzle of the rifle, something to be discouraged.

Case 2. Use of Sling

This case deals with Sergeant Baker. There are about a hundred and eighty others in his class who reason the same way he does. "When I was in Korea I *never* used a sling in combat, and don't know anybody who ever did use one. Why do you teach that it's so important?"

A properly adjusted sling will steady the rifle. Even the most diehard combat Infantryman will agree to that statement. In training it's a device which helps to set up "ideal conditions" for the soldier

* Based on one 200-man class each week for fifty weeks.
** Paige Trainer.



learning to deliver accurate fire. When he becomes proficient in using his rifle, he may feel that he no longer needs this assistance. The fact remains — and men who have devoted their lives to good shooting agree — that the sling will assist in making an accurate shot MORE accurate, no matter what the particular situation may be. The Infantryman in combat may not always be able to take time to make a sling adjustment. If the situation permits, however, a good tight sling will greatly increase his chances of a first round hit. The sniper, for example, certainly would use a sling to good advantage. And it may make the difference between his life and that of an enemy.

Case 3. Positions

Officer Candidate Charlie typifies an attitude quite prevalent when he asks the following question during correct "positions" instruction. "Why do I have to practically kill myself to get into a good position to shoot the rifle? By the time I get my elbow under the receiver, my body weight distributed and so on, I'm too tired to squeeze one off!"

Mastering a good shooting position requires a loosening of the muscles — a limbering up period. Only after the body has been properly conditioned through practice can the principles of "muscular relaxation" and "bone support" be properly applied. The soldier's body can be compared to the base plate on a mortar. A good solid foundation will improve accuracy; a foundation built on sand, or a shaky, unsure base, will result in a miss at the critical moment. It's as simple as that.

Case 4. Trigger Squeeze

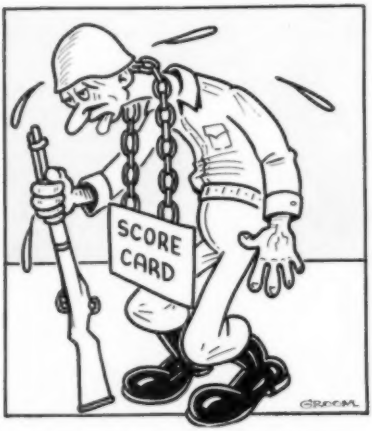
This case deals with the most important single step in preparatory marksmanship training, "trigger squeeze." The "case's" name is Lt Fox and his question has been asked at least a thousand times. "Why is trigger squeeze considered so important? Why can't I judge when to let one go, without worrying about my forefinger, breathing and what not?"

Let's assume that a soldier has learned the correct sight picture. He

gets into a perfect position after working many days to loosen his muscles and condition his body for the task. With his sights aligned and with no difficulty encountered in attaining a perfect sight picture, he suddenly jerks the trigger and fires the rifle. In that one fleeting instant he has nullified everything he was trying to accomplish and, what's more, he missed his target! By not squeezing the trigger properly, he disturbed his position and his aim. When the hammer fell, he was actually out of position, his sights were not aligned, and he did it all with the forefinger of his right hand!

To squeeze the trigger properly, a firm grasp of the small of the stock is the first step. The forefinger should be placed on the trigger anywhere from the tip to the second joint. Here's where breathing comes into the picture. Take a good deep breath, then exhale to let about half of it out. The rest of it is locked in the throat. In other words, you're NOT BREATHING while actually squeezing the trigger. When the rifle does go off, it should be a complete surprise. If it's not, you'll naturally flex your muscles or do something which will disturb both your position and aim at the very instant the hammer falls! By squeezing the trigger with a heavy initial pressure (varied slightly each time you do it), you'll get a "surprise shot" every time.

The trigger finger should be brought straight to the rear with an ever-increasing pressure. This will prevent any disturbance of the position and aim which, to this point, you've worked so hard to attain. When the rifle fires, follow through! Don't develop a tendency to come out of position right away. If you do, you'll eventually develop the habit of coming down too fast, and disturb either your position or aim (or both) BEFORE the hammer falls. This unpleasant practice is referred to as "snap shooting." Correct trigger squeeze cannot be overemphasized in training. Major Warren P. Davis' article in the October 1952 issue of the QUAR-



TERLY is right down the line as far as this step is concerned. As the title of his article implied, "It's Either a Good Squeeze or a Miss."

Case 5. Sustained Fire

During the last phase of preparatory marksmanship training Pvt Easy says: "I never have any trouble shooting a good score in slow fire, but every time I shoot a sustained run, I hit everything but the bull's eye. I'll *never* be able to do any good when I have to rush to get them off in time. What's the use in even trying?"

One of the main reasons for lack of confidence in sustained fire is that a soldier fails to realize that accuracy comes first and speed second. The principles which apply to slow fire apply equally to sustained fire. An improperly trained marksman "tightens up" at the very mention of the words "sustained fire." He wants to hurry and frequently becomes careless. Coaches often add to this anxiety by telling him to "hit the ground" when the targets appear. During sustained fire exercises on the prep field, confidence can be instilled through the use of dummy rounds and timed runs. Each movement of the body (dropping into position, raising the rifle to the shoulder, etc.) should be deliberate and without wasted motion. To insure proper breathing between rounds, the firer should count each shot after the hammer falls and after he has "followed through." Only by constant practice can individual weaknesses be discovered and corrected.

A common tendency (particularly among right-handed firers in the prone position) is to squeeze the first round off accurately — and then to string the subsequent shots across the target from left to lower right on the panel. This indicates that the right elbow is slipping slightly with each shot, disturbing his position and his aim, and causing him to exert a constant muscular effort to get back on the target between shots. He may scoop out a little dirt to form a depression in which to place his elbow. The importance of accuracy can be emphasized by telling a soldier that if he were firing at a pillbox aperture, one "center bull" would be worth more than nine "near hits" spattered against the surrounding concrete. The same principle applies to his range score. Six hits in the black and 3 complete misses will add up to more points than all nine in the three ring! Carefully supervised practice will build confidence; knowledge and confidence will insure accuracy. Try it.

Case 6. Score Cards

Pvt Fox looks up with a pained expression and asks, "Sir, I don't

know much about shooting a rifle, I'll admit. I see why correct positions are important. I agree that there's only one right way to squeeze the trigger. I go along with everything else you teach — but there's one thing I can't understand for the life of me! Why is the score card so important? It's like a chain around my neck having to come out of position, plot my call, plot my shot groups, and fill out all that other stuff when I'm trying to concentrate on shooting!"

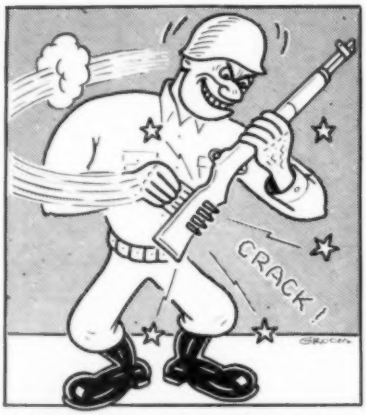
Fox answered his own question with the last six words he uttered, "I'm trying to concentrate on shooting." Unfortunately, good shooting cannot take place without good thinking. Most novices concentrate on the physical rather than on the mental processes involved in developing effective marksmanship ability. The score card was devised to act as a check — to remind the soldier to *think* while he is shooting. A properly kept score card requires him to come out of position between slow fire shots, thus he relaxes before firing again. He commits himself to paper when he "plots his call" and, by analyzing his plotted shot group later, he can readily determine just what he has been doing wrong! A completed card gives him a personal record to which he may refer before going out to shoot again. A better score will be his inevitable reward!

Case 7. Windage

Sergeant George is an old soldier. He's had a lot of experience with the rifle and agrees generally with the doctrine in the manual. He is well adjusted to Army life, but asks this question: "Why don't you

teach Kentucky windage? If I can hit an anemic rabbit at 300 yards using it, why can't the trainee learn to do it, too?"

The M-1 rifle is equipped with adjustable rear sights to help, not hinder, the man using it. Look at it this way. Many men solve simple problems in addition or subtraction by counting on their fingers simply because they haven't learned a better method. By the same token, individuals who use "hold off" (or Kentucky windage) do so because they haven't learned how to use their sights properly. What's more, they're *afraid* to use them! When a shooter on the known distance range consistently groups his shots in an area outside the bull's eye, he knows that a change in his rear sight adjustment is probably in order. By applying the elevation and windage rule governing the value of each "click," he very easily moves the center of his next group to the center of the bull's eye. Kentucky windage may do the same thing — but when you use it you

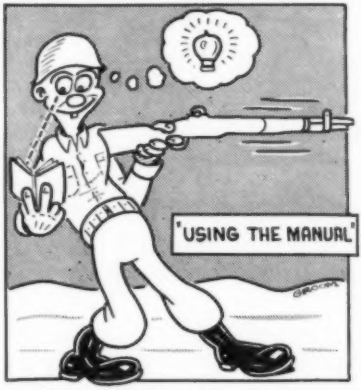


introduce an error in sight picture which has to be constant with each shot. Why do the work yourself when your sights are made adjustable to accomplish the task for you? Here again improper training plus uncertainty and lack of confidence equals a poor score. Use your sights!

Case 8. Long Rounds

Private First Class King has muscles, and he loves to show them off at every opportunity. One of his favorite pastimes on the Rifle Range consists of unloading and unpacking ammunition with great gusto. He tosses the wooden crates around until they're ready to split at the seams. After removing the bandoleers from the metal containers, he checks each clip carefully for long rounds, just as he was taught to do during basic training. And if he finds one — stand clear! He slams the bullet tips against that rifle stock so hard that the noise becomes distracting to the man in the pits.

All ammunition, whether it be 30 caliber or 90 millimeter, should be handled with care. It is expensive, sometimes difficult to procure and can often be dangerous when abused. Our friend with the biceps should be called aside by an officer and given a talk concerning the "facts of life" in plain, easily understood language. Rough handling will result in damage. Damage will cause stoppages, to say nothing of a waste of the taxpayer's money! When a long round is discovered in a clip, the easiest and most reliable method of reducing it is to simply do this: Remove the top round, seat the remaining seven



gently with the palm of the hand and replace the round which you removed, making sure that it rests securely against the clip wall. Many soldiers do it King's way. You can pick them out by looking at the battered rifle stocks along the firing line. Try doing it the right way. It's easy after you've done it once or twice.

Case 9. The Coach's Job

"You say that the coach's job is very important and that he can do a lot toward making or breaking a shooter. The guy who's coaching me knows less than I do about

shooting a rifle. How the devil can HE help me? It's a case of the blind leading the blind, isn't it?" Corporal William asked this and I'm sure you've heard this sentiment express many times.

A conscientious coach on the prep field or rifle range, whether he be an instructor or a fellow student, can aid the shooter immeasurably during the practical application of the principles of good marksmanship. He can, first of all, observe errors in a position which the shooter himself cannot always sense. He doesn't have to be an expert to do this. Since he, too, has received recent instruction (along with his pupil) in the use of the M-2 Aiming Device,* he can detect errors in sight picture and sight alignment. It doesn't take a distinguished marksman to tell whether a man is breathing properly during slow fire — or taking a breath between shots during a sustained fire run. A coach who is given to understand the importance of keeping an up-to-date score card reminds his shooter to call his shot and to plot his call in the column provided. He can encourage him to relax. He can detect evidence of flinching — and correct him by loading an occasional dummy round along with the live ones. He can further check trigger squeeze by placing his finger on the trigger beneath that of his pupil and having him squeeze one off. He can also, by the way, place that same finger *over* the firer's and apply pressure straight to the rear to show him how it should be done. In addition to all these things, he can give moral support to the timid and instill confidence in the novice by the very sincerity of his manner and the tone of his voice.

Stick to the Manual

We could go on for several more pages digging into our file of prep field "case histories." I believe that many of you will at least agree that there is a definite reluctance among Infantrymen to read (and follow) the principles set forth in Field Manual 23-5. If these same critics of established doctrine were all expert marksmen, then I'd say it's time we took their criticism seriously. Unfortunately, all are not experts. Each day some of these very individuals display their inability to shoot well, both in training and in combat. In the latter case, of course, it's far from being a joking matter. Some of them shoot and miss. Others don't shoot at all — for a variety of reasons. Most of these reasons can be traced to lack of self-confidence because of improper training. If the fundamentals

*A training aid which clamps over the rear sight enabling the coach to see the pupil's sight picture reflected in a small mirror.

of good shooting are *learned* and *mastered early* in an Infantrymen's career, he will improve in confidence, accuracy and effectiveness as each day passes.

Competitive Shooting

In addition to well-planned and properly - executed marksmanship training, the soldier's interest can be greatly stimulated through competitive shooting.

Competitive shooting among soldiers, groups and even small units, will do much to stimulate interest in marksmanship. Many installations have organized Rifle and Pistol Clubs which are sponsored by the Army in cooperation with the National Rifle Association. Membership is open to all personnel, both military and civilian, who are interested in good shooting. Set up on a non-profit basis, local and regional tournaments are held periodically and awards in the form of medals and trophies are presented to the high-scoring competitors.

The Fort Benning Rifle and Pistol Club conducted several such events during the past year and it drew competitors from all parts of the world. Its membership has grown by leaps and bounds and it can look with pride upon its efforts in the field of competitive marksmanship. Among its members you'll find colonels and privates, officer candidates, non-coms and even a few wives and civilian friends of soldiers stationed here. Most of these people became interested in shooting as a hobby because of having witnessed a tournament in which a friend or relative was taking part. They found, much to their surprise, that with a little practice on Saturday afternoons or Sundays, it wasn't at all difficult to enter local competition — with a very good chance of winning! In a registered match, each individual competes with others of similar ability and experience. Starting out on the "bottom rung of the ladder," a beginner would be classified as a "marksman" and special awards are set aside for the high scorers in each match who are considered to fall within that classification. Of course, the ultimate goal of all riflemen is to improve and raise their classification to sharpshooter, expert and, eventually, to qualify as a "distinguished marksman."

Don't be one of our "cases" who suffer the ills brought on by improper training, lack of confidence or failure to read the manual. Conscientious application of the established and tested principles of marksmanship will teach a soldier *how* to shoot. Practice through competition with others will build confidence and teach him to shoot *well*! Only in this way shall we succeed in making an expert shot of every officer and enlisted man who wears the crossed rifles of the Infantry.

Quiz

LT MORRIS P. WOLF

Test Your Military Knowledge

ANSWER THE FOLLOWING QUESTIONS and determine whether you are a bolo, recruit, marksman, sharpshooter or expert!

Possible Score	100 points
Expert	90-100
Sharpshooter	70-89
Marksman	50-69
Recruit	30-49
Bolo	0-29

QUESTIONS:

1. The cyclic rate of fire of the Heavy Machine Gun, Caliber .30, M1917A1 is:
   a. 450-600 rounds per minute
   b. 400-550 rounds per minute
   c. 400-600 rounds per minute
   (10 points)

2. What is the difference between military information and military intelligence?
   (10 points)

3. What is the definition of Top Secret Security Information?
   (10 points)

4. What is the axis of signal communications?
   (10 points)

5. Which of these companies is not organic to the Infantry Regiment:
   a. Heavy Mortar Company
   b. Medical Company
   c. Engineer Company
   d. Tank Company
   (10 points)

6. What are the characteristics of a good assembly area?
   (2 points each, maximum 10)

7. Should a reconnaissance patrol be:
   a. Three or four men
   b. Platoon size
   c. Company size
   (10 points)

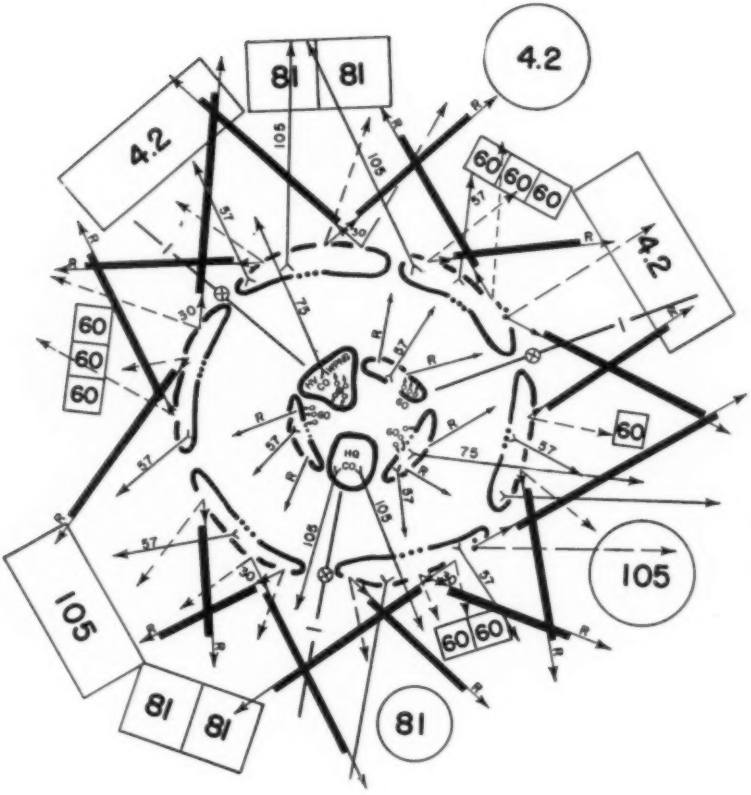
8. What do the letters BMNT stand for?
   (10 points)

9. The Recoilless Rifle Platoon of the Infantry Battalion Heavy Weapons Company consists of a platoon headquarters and:
   a. Two 75mm recoilless rifle sections
   b. One 75mm section and one 105mm recoilless rifle section
   c. Two 75mm sections and one 105mm recoilless rifle section
   d. One 75mm section and two 105mm recoilless rifle sections
   (10 points)

10. What special staff function is performed by the leader of the counterfire platoon?
   (10 points)

Turn to page 63 and see how you rate. Look for another Quiz in the next issue of the INFANTRY SCHOOL QUARTERLY.

Perimeter Defense



CAPTAIN CLAUDE K. JOSEY
Infantry

✔ Capt. Bill Lyons Plans the "New Mission"

THE 1st battalion commander, young Lt Colonel Muth, walked to the door of the CP tent. He stood for a moment looking upward at the scrub-covered hills and the bleak, rock-strewn valley. He frowned. "Telling the men we're not going to be in reserve is going to be rough. They're tired, but . . ." he muttered to himself.

Then he saw his executive officer, Capt Bill Lyons, approaching the CP. He beckoned him.

"Bill," he said, "I thought we'd be in reserve here for a few days, but the old man has just given us a new mission."

"Yes, sir!"

"Here's the story. The commies have pulled back. They apparently don't want to run a defensive line through that flat terrain that extends a couple of miles north of Chorwan, and we certainly don't. Well, it seems that division wants to maintain contact with the Reds by using patrols. This is going to be our job."

"Hmmmm — isn't going to be easy."

"Well, it seems the Red lines are too far out for us to send patrols out each night and expect them to return by daylight. So we're going to move the battalion up to Hill 484 — up here," he said, pointing to the location on the map in his hand. "You'll notice that it rises right up out of that flat valley. We're going to set up a base on that hill and send out patrols to contact the enemy."

"We're a damn good outfit, Colonel, but this sounds like a rough job."

"It might be, Bill, but you get the 'three' and start planning our defense of Hill 484. I've got to get up to regiment for the details and the order. Don't forget we'll be several miles forward of the present front line battalion — so plan on setting up a strong perimeter. I'll see you later."

The Colonel walked toward his jeep. Bill stared after him until the vehicle disappeared down the road.

"Let's see," he thought out loud as he checked his watch, "it's only 0900 now and by the looks of things we probably won't move out until tomorrow morning. I'll contact the 'three' and call the companies. I'd better give them what information I have."

Captain Bill Lyons, who had been the best company commander in the battalion until his recent assignment as battalion exec, was secretly waiting to put on the gold leaves his wife had sent. Bill had set up a separate company perime-

ter any number of times, but never a battalion perimeter. If he did a good job . . .

He mumbled to himself, "Battalion perimeter defense. I wish I remembered exactly how they taught me to go about placing the companies, the battalion weapons, security, and the attached weapons."

He picked up a copy of FM 7-20. "Index — let's see — perimeter defense, paragraph 364. Hmmm! One paragraph. Why don't the guys who write these things give a little detail? Sometimes they sure leave a lot to one's imagination."

But he read the paragraph, and sat down — to think.

His deliberation was interrupted by Captain Russ Adams. Russ was the exec of the second battalion. He and Bill had been classmates at the school on the Upatoi. "How you doing, boy? And why are you making like a thinker?"

"Russ, I've got a problem. I can't remember some of the things I should know about setting up a battalion perimeter defense."

"You see! I told you to keep awake. But, as it happens, Bill, I had to bone up on the same thing a few weeks ago. Maybe I can help."

"Good! Now, I remember, of course, that there are two methods of placing the rifle companies to form the perimeter, but I'm a little fuzzy on the details. How about taking it on from there?"

"Okay. You remember that in one method each company is assigned a sector to defend. When it's possible, you want to have each company place two platoons (each with all three squads abreast) on the outer perimeter and one platoon on the inner perimeter."

"Right!"

"And you remember the advantages of this method. It gives depth to the company position, makes control easier, and gives one platoon of each rifle company the same mission you find in the regular type defense. You know — to support the front line platoons by fire. We've found it gives the company commander an opportunity to place his 60-mm mortars and CP near his own support platoon. That usually provides for proper employment and good security."

"Some of this is coming back to me now, Russ. For example, the second method is to assign two rifle companies to the outer perimeter and the third one to the inner perimeter. I knew that when I was still a company commander."

"Right! Then you know, Bill, that they taught us the inner perimeter should be a minimum of 150 yards from the outer perimeter."

"Yeah," said Bill drawing a circle on the ground. "As I recall, that's done to prevent the inner perimeter from coming under the same fires as the outer perimeter."

"Right. And the inner perimeter should be no further than 500 yards in rear of the outer perimeter."

"That's because the platoon on the inner perimeter can't do the job of supporting the outer perimeter with the M-1 at any greater distance. Correct?"

"Absolutely!"

"Good! And, as I recall, a company with two platoons on the outer perimeter can be expected to defend a frontage of up to 1200 yards." Bill grinned as it started to come back to him more fully. He was licking his own problem.

"Sure, and the gaps between units on the outer perimeter that might exist when the terrain is open have to be covered by fire and . . ."

"What's this? A reunion?" a voice boomed as a tall, heavy-set captain walked into the CP shack.

"Jack Gates — what are you doing over here? I haven't seen you since Benning," said Bill.

"Well, if it isn't the No. 1 student," Russ said. "This character stayed over to instruct. Remember?"

"Until the long arm of Korea beckoned me east," said Gates. "Got anything good to — ar — uh — eat, Bill?"

"Sure thing, Jack. They boys dug up a pot of Kimchi just this morning. Like to try some?"

"Hell, no! This may be my first visit to your sector, but I've been here too long to be taken in by a gag like that. What was the big confab I heard when I walked in?"

Russ told him. "And by the way — " he turned to Bill, "The Pride of the Post ought to be able to give us the latest poop."

"Well, modest though I am," said Gates, "I'll have to admit that this perimeter business is something I taught at Benning."

Bill grinned. "Let's fire a few questions at him, Russ. We'll see how good he is."

"Shoot."

"Well, in close terrain where fields of fire and observation are restricted there shouldn't be any gaps between units. But what's a guide for company frontage in a case like this?"

"You can assign a company a front as small as 400 yards in the close terrain you speak of, which is somewhat narrower than the 600 yard minimum used in the more conventional defense. If you have to assign a company on the outer perimeter (a frontage of more than 400 yards in close terrain), the company commander will usually have to use all three of his rifle platoons on that perimeter."

"Isn't there some special consideration to watch for in selecting boundaries?" asked Russ.

"No," said Gates. "You use the same consideration in selecting your boundaries and limiting points when setting up a perimeter defense that you use in a more conventional setup. There's just one thing to remember."

"What's that?"

"When a platoon on the inner perimeter has the mission of supporting more than one company, the rear extension of the company boundary will not include that platoon."

Bill interrupted the lesson. "If your tonsils are getting dry," he said, "I can brew a round of coffee."

"That sound quite fittin' — quite," said Gates, who had read *Gone With the Wind* and two Brit-

ish murder mysteries on the boat trip.

While Bill lit the stove, Russ stood up and walked to the tent entrance. He looked upward at the knife-sharp ridges. "Jack," he said, turning away, "my experience defending on a 360-degree front taught me there are a few exceptions to the conventional way of employing the battalion weapons."

"Yes, there are. Say, are you listening, Bill? This is for your benefit, you know."

"Go ahead. I'm just stirring this stuff."

"Well, you take the machine guns of the Heavy Weapons Company. They're usually employed on the outer perimeter in perimeter defense. It's always best to employ them in pairs, but sometimes, to get interlocking bands of grazing fire around the entire perimeter, you have to employ them singly. Or you might want to use a pair of guns to cover a particularly dangerous approach. Of course, all pairs and each single machine gun on the outer perimeter are assigned an FPL and a sector of fire."

"How about your other weapons, Jack?" asked Bill.

"Let me carry the ball," Russ interrupted. "Correct me if I'm wrong, but aren't the 81-mm mortars usually held within the inner perimeter in a platoon position? That's the way we employed them."

Jack nodded agreement. "Keep going."

"One barrage and any number of concentrations are planned for each mortar. It all depends on where you want the barrages, whether the 81's are laid individually by section or by platoon. And every mortar has to be prepared to lay its fires in any area that's threatened."

"Spoken like a real student, Russ. And how about the 75-mm rifles?"

"They're placed to fire on grouped personnel and point targets — and they're also positioned to be able to fire on any enemy armor that may try to penetrate the outer perimeter."

"What about the new 105-mm recoilless rifles?"

"They're employed to destroy any enemy armor forward of the outer perimeter. Numerous supplementary positions should be prepared for these rifles to insure flexibility for your antitank defense."

"Okay, men, gather round. The coffee's ready. Go easy! That cup has to do for the three of us," Bill warned. "Here, Jack, start it out."

Gates sniffed the brew and swallowed. "Gad, that's not exactly the way my wife fixes it!"

"You mean that it's better?"

"No, it's bitter. Got any sugar?"

"I have," Russ fumbled around his pocket, "somewhere — yeah, here." He held up a C-ration sugar packet.

Bill was still trying to get all the dope he could. "Look, you guys drink up. I want to pick your brains dry before the old man gets back. Suppose I review the use of company weapons and you and Russ see if I'm pitching straight."

"Okay, your spiel couldn't make this coffee taste any worse."

"It's been my experience that you usually have to use your rifle platoon machine guns singly as you do those from Heavy Weapons, and for about the same reasons. One difference though: they are usually placed on both the inner and outer perimeter within the rifle platoon positions. Common sense figures in this thing — if the fields of fire are really restricted on the inner perimeter, then you may have to place one or maybe even both of the guns of the support platoon on the outer perimeter. Right?"

"As far as you've gone. You forgot to say that machine guns on the inner perimeter are given a principal direction of fire only, and frequently are positioned to fire into gaps, if they exist, between the units on the outer perimeter."

"Right, Jack. Now, let me move on to the 60's. I always placed them within the inner perimeter, unless they couldn't do the job from there. Sometimes I even found it necessary to split the section and use one or more of the mortars on the outer perimeter. And it almost goes without saying that each 60 is assigned one barrage and a primary sector of fire. Then, too, when they're on the inner perimeter the 60's must be prepared to shift their fires to cover the company front."

"And how about your 57-mm rifles, Bill?" Russ asked.

"Well, I always employed one in each platoon area, unless its field of fire was restricted in the support platoon position. Then I'd place all my 57's on the outer perimeter. How's that, expert?" he said, looking at Jack.

"You pass, old man — with an A. I'm positively proud of you."

"Now, Russ," Jack probed for further useful hints, "you've had some experience recently with this business. How did your battalion employ the weapons that were attached or were in support?"

"Well, we used the 4.2-inch mortars as in a normal defense, with one barrage and any number of concentrations for each platoon. They may be placed anywhere around the perimeter that the battalion commander desires.

"Of course, the artillery wasn't attached — that's normal — but it sure supported us. We got together and planned concentrations and barrages and integrated them into the over-all battalion fire plan.

"The fact that you have forward observers for both the artillery and 4.2's, even when they're not attached, helps. These guys have to be located so they're able to call for fire and adjust it when it's needed."

"How about tanks?" asked Bill.

"You should hold them in a mobile position if you have several armored approaches into the perimeter. However, if the approaches are limited you can probably do better by placing a section of tanks on the outer perimeter and a section on the inner in prepared positions. If they're held in mobile positions, you've got to prepare firing positions, routes, and range cards in advance for all positions. This

is based on my experience, Jack. How does it stack up?"

"It sounds good. But," and he turned toward Bill, "you've got to be careful that your tanks don't rip up your wire when they're moving around inside the perimeter."

"So far you guys have been a big help — but how about the matter of security? Like almost every unit on perimeter defense, we'll be operating alone and won't be able to count on anyone else to help with security. Usually, and I read it somewhere, there are no general or combat outposts. Anyway, there aren't any in this case; so what kind of security should we put out?"

"Well, Bill," Russ shot the answer back immediately, "your best bet is to patrol and patrol and patrol. My old man says that to get information about the enemy you've got to patrol continuously and aggressively."

"He's so right," Jack said, after draining the last coffee from the canteen cup. "And just to put you guys straight, our outfit was on a perimeter defense about two weeks ago. Say, Bill, boil some more water, will you? Your coffee's no good, but it keeps me warm."

"Okay, but there's a small fee for a second cup. I'm listening; you two keep talking while I slave for you over the stove."

"You were saying something about patrolling, Russ — "

"Uh-huh. Well, in addition to recon patrols, you sometimes have to use combat patrols to cover the organization of the defense and to keep supply lines open. We also put out OP's during the day and listening posts at night. All of them have to be put around the outer perimeter to cover all possible avenues.

"You know we had an interesting experience along this line not long ago. The commies tried to infiltrate our perimeter one night. They seemed to be after our key men and the CP's. Of course they weren't successful, but they really tried. One small group even went so far as to try an attack on the inner perimeter while a larger group, working along with the smaller one, conducted a main attack on the outer perimeter. That — believe me — was a night to remember. We clobbered them all night, but they sure fought back!"

"I'll tell you what happened to us one time," Jack added. "We had them try to mass an assault wave close in for what amounted to a coordinated attack against an MLR!"

"That's the kind of thing I suppose we can expect," Bill said, as he poured more powdered coffee into the canteen cup. "What's the best defense against it?"

"The best defense? Well, each company has to put out its own local security, just as it would in a more conventional defense. This, in addition to OP's and listening posts, means shifting your troops from the inner perimeter to cover any gaps between units on the outer perimeter. You have to do it at night and whenever visibility is poor."

"What about your infrared equipment, Jack? Did you use it?"

"Certainly did. You have to use it in every way you can, along with wire, booby traps and illumination. These are all good when you have to guard against infiltration and surprise attacks."

"Here's the coffee, Jack. Watch it! The cup's hot — and no cracks. It'll cost you one cigarette. I'm out."

"You know, Bill, it'll be damn nice to have lots of coffee — the real thing and a few grounds in your cup. Seems like lately I miss the mess sergeant's delight no matter where I am."

"Don't go sentimental on us, just sip a little and pass it on."

"Okay. Here's a cigarette, Bill."

The three of them were silent for a few moments. Each thinking his own private thoughts. Then Bill broke the reverie.

"I hate to do it, but so help me, the old man's due back soon. Regiment's not too far down the road, you know, and I still have some questions."

"Yeah, Bill, I know how you feel."

"Well, I found when I still had a company that I had to carefully coordinate movement within a perimeter at night. How does this apply on a battalion scale?"

"You have to look at it this way," Jack explained as he put down the empty canteen cup. "Whether or not your men can move freely at night depends upon two things: the first is how well trained your unit is and, the second, how good the enemy's infiltration tactics are. You've got to determine the answers to these before you decide whether your men can move around at all."

"But there are some things that have to be done, regardless."

"Sure, like the movement of litters and redistribution of ammo. My point is that even these activities should be held down to a minimum."

"Bill," said Russ, "you've been drawing circles on the ground. Why? You know perimeters vary in shape, depending on the good old terrain and situation. For example: whenever a battalion commander knows the most probable direction of enemy attack. If he's reasonably certain, he'll place a larger number of his men and weapons to cover that approach."

"Russ is right. Why, you take some of those units that fought in North Burma during World War II; they frequently operated down jungle trails. I've read that when they were ordered to stop for a short while they'd move off the trail and set up a long perimeter, a sort of elongated oval in shape."

"That's interesting, Jack. But isn't it true that usually the shape of the perimeter more or less conforms to the particular hill or terrain you're working on?" asked Bill.

"Yes, I suppose you could say that you try to get the best observation and fields of fire, and that these two considerations, together with the terrain, determine what it'll look like, and . . ."

"You should try tying your perimeter into some natural obstacle, like a river. You see, Bill, that allows you to concentrate more of

your force in the direction you believe the enemy is most likely to attack."

Bill looked at his watch. "I still have to get together with our 'three'," he said. "I alerted him before you got here. But before I talk it over with him, give me a quick summary."

"Sure thing," said Jack. "To begin with, you might say that a perimeter defense is conducted pretty much as a normal defense. Your artillery, mortars and tanks hit the enemy at long ranges. When the commies get within small arms range the other weapons on the outer perimeter open up. If and when he reaches his assault position you call for your FPL fires."

"What if he should happen to penetrate? What then?"

"We never had that happen, Bill, but if it does, well, you resist with all the fire you can whip up within the battle position. When you've beaten the penetration to a pulp — contained, I think is the correct word — then use the men who weren't actively engaged to counterattack and regain any lost portions of the outer perimeter."

"What about counterattack plans?" asked Bill.

"They're necessary, of course, but they will have to be general because there are so many possible routes and directions of attack."

"Should you pull out platoons that aren't engaged on the outer perimeter for a counterattack?" interrupted Bill.

"Only in a situation where the old man is reasonably certain that the commies won't attack in their area. Even then you ought to leave a squad or more on each platoon position to act as a security force."

"I think I've got it all now," said Bill, as he went outside with his two friends. "Thanks a million. I see the 'three' coming over now, and I'm really prepared for him."

Jack and Russ climbed in a jeep. "See you later, Bill."

"See you, and thanks again."

Bill watched them drive off, then turned to greet the battalion S3.

"You all ready, Luke?"

"Sure am, but I hope you've gotten something pretty good on perimeter defense. I'm a little rusty."

"Don't worry, Luke, I've got it down solid. Let's go. Did you see that jeep that just pulled out?"

"Yeah."

"Well, it carried two field manuals — 1953 style."

"Huh?"

A battle sometimes decides everything, and sometimes the most trifling thing decides the fate of a battle.

— Napoleon Bonaparte

Answers to the Quarterly Quiz

1. a. 450-600 rounds per minute (FM 23-55, Par. 1[b]).

2. Military *information* comprises facts, materiel, photographs and other illustrative matter; in short, observations of any kind which may refer to an enemy (actual or potential) or an area of operations. Military *intelligence* is the knowledge gained through the collection, evaluation, analysis, integration, and interpretation of military information. Stress is placed upon awareness of the enemy, the weather, and the terrain. (See FM 30-5, "Combat Intelligence," Feb., 1951, Pars. 5 and 6.)

3. Briefly stated, Top Secret Security Information pertains to information or material relating to national security. Any compromise of this type information would seriously endanger our national security. For a more detailed answer, see AR 380-5 (6 June, 1952), Par. 11, with Changes 1 and 2.

4. That route along which we shall establish future command posts is described as the axis of signal communications. (See FM 7-25, "Headquarters Company Infantry Regiment," August, 1950, Par. 100.)

5. c. Engineer Company. (Infantry Regiment, T/O&E 7-11, Dept. of the Army, 15 May, 1952.)

6. The characteristics of a good assembly area are: cover from direct fire and concealment from observation (both aerial and ground), sufficient size to permit vehicles, personnel, and installation to be dispersed properly. Whenever possible, good road nets should be provided and terrain features which aid security should be utilized. (See FM 7-20, "Infantry Battalion," March, 1950, Par. 155[b].)

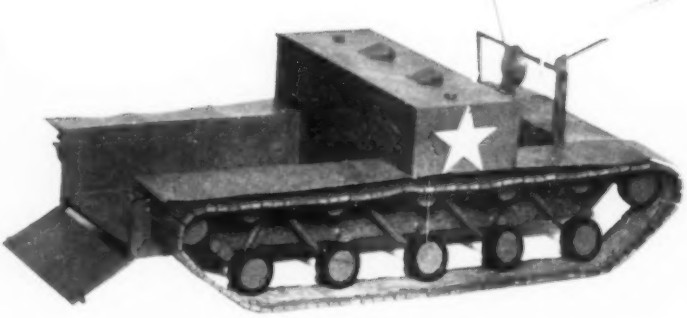
7. It is recommended that a recon patrol be small; the manual states that often three or four men may be sufficient. The number of men on a reconnaissance patrol, however, as with the number of men on any patrol, is determined by the mission. (See FM 21-75, "Combat Training of the Individual Soldier and Patrolling," Oct., 1950, Par. 217.)

8. *B*eginning of *M*orning *N*autical *T*wilight. The beginning of that time of day between complete darkness and the rising of the sun. (See FM 101-10, "Organizational, Technical and Logistical Data," August, 1949, Par. 45[f] and FM 21-30, "Military Symbols," June, 1951, Par. 19, page 121.)

9. d. One 75mm section and two 105mm recoilless rifle sections. (Change 1, T/O&E 7-18, Dept. of the Army, 30 Sept., 1952.)

10. The leader of the counterfire platoon is also the regimental counterfire information officer. (See FM 7-25, "Headquarters Company Infantry Regiment," August, 1950, Par. 28[1].)

Mobile Infantry?



MAJ. R. A. STAMEY, JR.
Models By The Author

✓ Is an all-weather, all-purpose carrier feasible?

You be the judge.

MOBILITY! THE KEY to modern war. The Germans demonstrated this with their "blitzkrieg" as they swept across western Europe leaving beaten armies in their wake. Four years later General Patton's Third Army made the German war machine seem antiquated. His answer to their "blitzkrieg" technique was more mobility and greater speed.

The blitzkrieg posed a problem. We solved it. In future wars there will be new problems requiring new solutions. It is possible that in a future war we may find ourselves pitted against a numerically superior enemy. A natural problem that would arise is how to offset the advantages that would seem to accrue to the numerically stronger. Can we come up with a workable solution? I believe we can. What are we doing about it now? We're developing better weapons, obtaining greater fire power and increasing mobility (and speed). How about the Infantryman? Is he more mobile?

Let's consider this Infantryman a moment. Carriers have been developed for almost every kind of military equipment, but the foot soldier remains just that — a foot soldier. I realize that much thought has been given to this problem. Perhaps my thoughts will be of value in reaching a solution.

Now if we had a fast, low-silhouetted vehicle to get Infantrymen where they're needed without delay, without being tired from marching, and ready to fight — we would have the answer to the problem. Imagine how we could capitalize on surprise if we could move reserves at forty miles an hour, over all variety of terrain and bring them directly where needed.

The question is: Is such an all-weather, all-purpose Infantry carrier feasible today? To answer this, we must first see what characteristics such a vehicle should possess. The vehicle must be capable of transporting Infantrymen and their equipment over all types of terrain, under all weather conditions, and in all climates, while protecting them from the elements and conserving their energy. Its characteristics would come under four general headings: terrain performance, tactical utility, general utility and economy. Let's consider each of these.

Terrain Performance

The vehicle must be able to travel cross-country and traverse all but the most extreme types of terrain. It must be capable of moderately fast movement over snow, mud, sand, and swampland. To do this it

must be light and have high flotation. In other words, its weight must be so distributed that the force against the vehicle from the contacted surface is greater than its total weight.

An Infantry carrier must be high-powered to be capable of high road speeds and moderately high speeds cross country. It must be at least as durable as the men it is transporting, and it must be conditioned against extremes of temperature, dust, and precipitation.

Other necessary characteristics are high ground clearance and a smooth underbody. There must be clearance for any minor obstacles that might pass under the vehicle. It should have a smooth underbody to reduce friction with any object it might contact underneath, and to protect vital parts from stumps, brush, small trees, stones, snow, mud, etc.

Tactical Utility

The two most important tactical requirements are speed and a low silhouette. It should be capable of at least the same speed as any other ground vehicle with which it will operate or against which it will be matched. Any speed in excess of this minimum would be a distinct military advantage.

The carrier must be small and have a low silhouette so that it can be easily concealed, and present only a small target if exposed. Yet it must be large enough to transport an effective fighting unit without destroying its tactical integrity. The carrier must have sufficient cruising range to permit its employment in penetrations or envelopments of a decisive nature, or in co-ordinated operations with other ground vehicles. To gain surprise, it must be able to operate in darkness and make little or no noise.

General Utility

Since the carrier would be designed for the Infantry, it should be able to perform the many varied tasks required of the Infantry. In addition to transporting personnel, their equipment, and general items of supply, it must be capable of carrying both direct and indirect fire weapons. Unless it can do this, the Infantry's close support fire power will be unable to displace forward fast enough to contain its mission of close and continuous support.

As mobility increases, so do problems of support and transport. The carrier must be capable of towing additional loads, so that it can be used as a supply vehicle if necessary. The vehicle must be so designed that it can be used for special purposes, with only minor modifications. It must be an **all-purpose** carrier

Since the carrier must also be an all-weather vehicle, its design should incorporate features to protect personnel and equipment from the elements. These features need be available for use only when needed.

Economy

In a total war, involving the entire resources of a nation, consideration must be given to the cost of the carrier. The price of the vehicle must be compatible with the extent to which it will be used and the allocation of industrial effort to

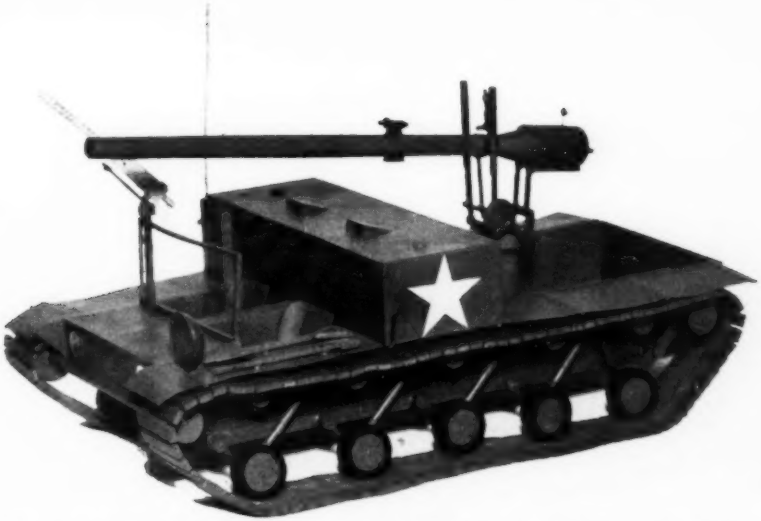


Figure 1. Oblique side view of carrier. 105-mm recoilless rifle mounted in cargo compartment.

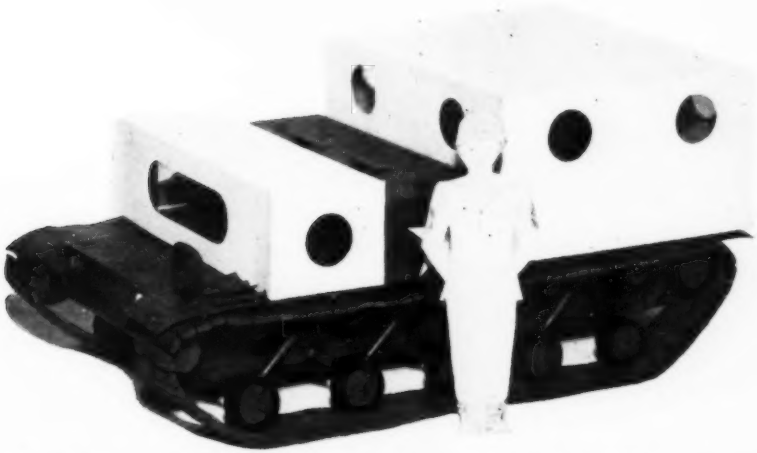


Figure 2. Shows inclement weather canvas canopy painted white for operations in snow. Compartment is blacked out by lowering port flaps on the inside.

other items in the national war machine. It must be designed so that it can be constructed easily and quickly. Esthetic appearance or luxurious gadgets are out. The vehicle should require little if any more maintenance than conventional vehicles of similar size and weight. Its operational cost should not be more than that of conventional vehicles.

It is my opinion that a vehicle can be designed with all of the characteristics mentioned above. Let us examine the details of this design more closely. (See Figures 1 and 2.)

We said that to travel cross-country, the carrier must have low unit ground pressure. This is usually secured by the use of tracks or oversized wheels with large contact surface. Since wheels large enough to furnish sufficient contact surface would be too large to meet the requirements of low silhouette and small size, the vehicle must employ tracks and road wheels.

Durability can be achieved by discarding conventional ideas of vehicle design and sticking to simple functional principles intended to bring about desired characteristics rather than a pleasant physical appearance. The result would be a box-type construction capable of enduring stresses and strains.

High ground clearance and a smooth underbody may also be achieved through functional design. Since the carrier would have a predetermined maximum height, its high clearance from the ground would be reflected in a lack of body depth. Foot space for transported personnel can be designed for the outside of the vehicle.

Functional design may also be used to advantage in keeping the vehicle light. This has been done for years in airplane construction, which uses a minimum number of reinforced structural members to carry the stresses and strains and covers them with a small-gauge metal skin for protection of inside parts and cargo. The vehicle, fully loaded, should not weigh more than 10,000 pounds.

To get a low silhouette, the power unit compartment and cargo compartment must be placed as low as ground clearance will permit. To avoid wasting space, the suspension and shock system can be located on the side of the vehicle instead of between the body and the wheel assembly. This can be done by using torsion bars and shock absorbers.

By placing the power unit at right angles to the axis of the vehicle and building the personnel seats into the fenders over the suspension system, the vehicle can be kept down to the required size.

The light weight of the vehicle, together with a conventional power unit of sufficient horsepower, will assure satisfactory speed. It is estimated that, with a 120 h.p. GMC engine, the vehicle would be capable of highway speeds of over 45 mph and cross-country speeds of up to 30 mph. Sufficient space would be available over the suspension system, next to the engine compartment, to provide two fuel tanks large enough to give a range of 200 miles. Extra fuel in cans could be carried in the cargo space.

To eliminate noise and to facilitate operations at night, the vehicle would have, respectively, an engine muffler and infrared equipment. To protect personnel and cargo from the elements it would have a removable canvas cover and a gasoline heating system designed to heat personnel compartments, engine compartment, and power train tunnels. This would provide quick and dependable engine starting and long battery life, as well as comfort. (See Figures 3 and 4.)

Since the transported troops would be seated on the fenders over the suspension system, the cargo space would be free to carry equipment. This space would have no fender wells protruding into it that would complicate loading. There would be room for weapons as heavy as a 105mm recoilless rifle or 160mm mortar.

The vehicle would have a full-tracked and powered trailer. A power take-off at the rear of the carrier would transmit power through the coupling to the trailer. The trailer should have a differential which would prohibit more effort forward than the vehicle was exerting at any particular time, to avoid jackknifing.

The carrier could be adapted for use as a warming tent, CP tent, aid

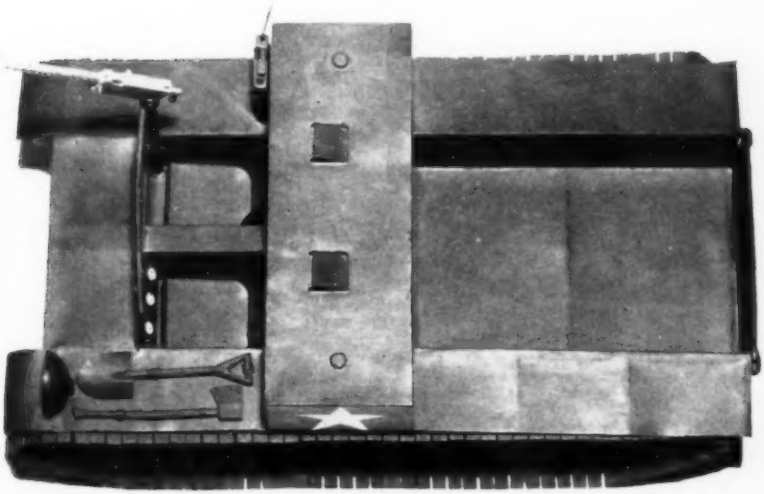


Figure 3. Top view. Shows rear fender personnel seats and cargo compartment free of fender wells and capable of accommodating 72 cubic feet of cargo.

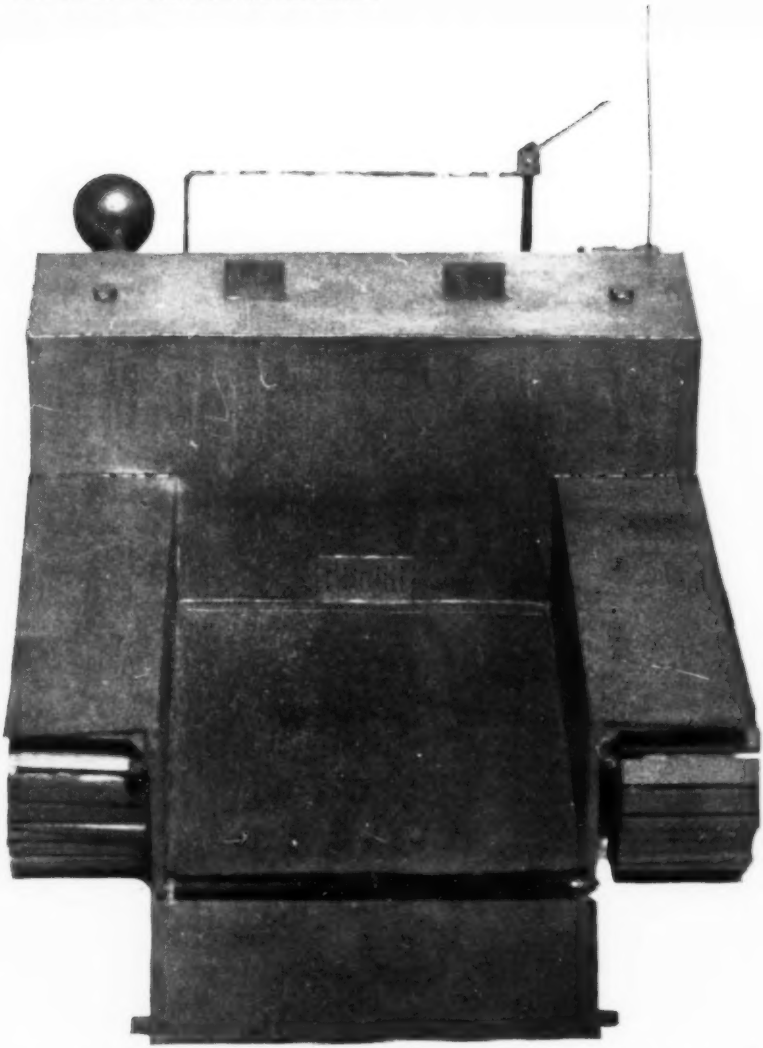


Figure 4. Rear view. Rear compartment vent of gasoline heater heats front and rear compartments. Tail gate is lowered, showing power train take-off coupling. Personnel compartment is capable of holding eight men of rifle squad (squad leader rides in front with driver), their equipment, food, ammunition, and enough gasoline for 210 miles of travel.

station, ambulance, radio vehicle, wire-laying vehicle, and for many other capacities, all with minor modifications.

The simplicity of the vehicle's design would be translated into simplicity of construction. It need not have so much as one curved piece of metal. The box-type construction lends itself to machine welding and quick easy construction by comparatively inexperienced personnel.

Maintenance would be easy and simple. Only the suspension system and power unit would require maintenance by trained mechanics.

Certainly with the features listed, inexpensive and efficient operation would be possible. The scale models shown give an idea of the physical appearance of the vehicle and some of its feature.

Employment of an all-weather, all-purpose carrier in the Infantry would not change present tactical doctrine. It would rather serve to enhance the application of the doctrine. Its outstanding effect would be to add strength to the offensive. Here would be the opportunity to exploit armored penetrations, envelopments, and the pursuit. The shifting of forces to build concentrations for offensive action could be accomplished quickly, with little planning and tremendous surprise. The carriers would bring squads into attack positions. The Infantrymen would dismount and commence their attack on foot, burdened only by their helmets, armored vests, weapons and ammunition.

Mobility of this type would permit Infantry units to employ a mobile defense when forced to defend on extended frontages. It would permit higher commanders to wait longer to determine the direction and location of the enemy's main effort in a major offensive, before committing troops held in general reserve.

There are four possible ways in which the carriers could be used with Infantry units. A selected number of Infantry divisions could be completely mechanized for operations with armored divisions as mechanized corps. All Infantry divisions could be partially mechanized by substitution of the carriers for conventional wheeled vehicles. (This would permit complete mechanization on short notice by furnishing the additional vehicles required for full mechanization from transportation carrier companies.) The carriers could be substituted for conventional vehicles on a seasonal basis when required, or could be held in carrier companies for attachment to Infantry units for special operations.

The all-weather, all-purpose carrier is one possible solution to this problem of speeding up the Infantry. If this suggestion does nothing more, it should give impetus to Infantry thinking concerning the possibilities of greater mobility.

It's true that this proposed carrier represents only "one man's opinion," but it is a technical, tactical and economic possibility. And we should keep in mind that mobility is the key to success in modern war.

Data and Specifications	"Stamey" Proposed Carrier
Length	13′ 3″
Width	7′ 3″ (16″ track)
Width	8′ 1″ (26″ track)
Height	4′ 3″
Height w/top	6′
Tread	72″
Crew	10
Weight, loaded (approx.)	10,000 (approx.)
Length track on ground	108″
Ground contact area	3,456 sq. in. (16″ track)
Ground contact area	5,616 sq. in. (26″ track)
Unit ground pressure	2.89 (16″ track)
Unit ground pressure	1.78 (26″ track)
Ground clearance	12″
Speed	45+ (approx.)
Fuel consumption	0.7 to 6 mpg (approx.)
Cruising range at 5 mpg	210 mi.
Gasoline capacity	42 gal.

Publication of this article is not necessarily to be interpreted as representing the thought of The Infantry School or THE INFANTRY SCHOOL QUARTERLY.

We asked the author to give us a few statistics regarding the models which illustrate his article. Here they are:

Total Pieces in Individual Assemblies		
Machine Gun	20	
105 mm Recoilless Rifle	50	
Sight, 105mm RR	8	
Each Wheel Assembly (shock absorbers actually work)	14	
Tail Gate (will raise & lower)	20	
Tracks	202	
Shovel	5	
Total Number of Pieces Made		534
Total Hours Spent Working on Models		240

New Look in Radios

MAJOR QUINTEN L. GATES

It's what these radios can do for you that counts . . .

CPL ROBERTSON was telling a story.

"So I said to him if Marconi could invent the darn thing, you ought to be able to fix it. Funny, huh?"

Pfc Grube didn't look up from his mimeograph machine.

"What you printing?" asked the corporal.

"It's just some poop on the new radios."

"What kind of poop?" asked Cpl Robertson.

"You think I read this stuff?"

"I know you do."

"Okay, so I do. They're changing all the old radios for a new kind. There's going to be an officers' meeting about them."

"Why they changing them?"

"You got a mind like a steel trap. I guess the old ones wore out."

Cpl Robertson put down his coffee. "You got any sugar for this battery acid?"

Grube was still running the mimeograph. "This is regimental headquarters, corporal, not the PX."

"Okay, okay. They replacing **all** the radios?"

"Yep, all the voice radios. They got three new ones — one for company, one for battalion, and one for regiment. It's all done according to logic."

"You mean they're getting rid of the old handy-talky?" asked the corporal.

"Don't worry. We got a new one to take its place. It's shaped to fit your head." Grube looked at the corporal. "Most people's heads, anyway."

"Okay, wise guy. You got a picture of it?"

"On that desk. There's a picture of the old one and the new one together." (Figure 1.)

Corporal Robertson looked at the pictures. "SCR-536. That must be the old kind. I guess the new one's the AN/PRC-6."

"That's a good radio, that PRC-6. FM, range 1½ miles, with detachable handset."

"Your sure know this stuff."

"Radios are my hobby."

"I wouldn't mind getting a communications job myself," said the corporal.

Pfc Grube lowered his voice. "I'll give you a hint. They need a demonstrator for that meeting. It's going to be in a coupla days. Why don't you ask your CO to put you in for it? It might help you get the job."

"Thanks, pal. I'll be back."

A week later the corporal walked into regimental headquarters. Grube again was working the mimeograph machine.

"How's tricks?" said Grube.

"Not bad. I got to be demonstrator at that meeting and now the old man's put me in for the battalion communication platoon. Boy, did I learn a lot! Those officers asked questions, and let me tell you, that COMM O really knows what's cooking."

Grube laughed. "So the little scheme worked, huh?"

"Yeah. I didn't have much to do except hold up the radios and point to the charts, but I listened to what was going on. I guess I know as much as anyone about the new radios now.

"Picture yourself in the regimental rec hall. The colonel opens the meeting by pounding on the table and saying we got these new radios and today we're going to look at them and learn something about them."

"Okay, okay, so what happened? So the old man pounds the table."

"And then the COMM O says the four types of radios can be referred to as 'Company Type Radios,' 'Battalion Type Radios,' and 'Regimental Type Radios.' "

"And then —?"

"Relax, son. I'm getting to it. Well, the COMM O takes over. He says the PRC-6 works on frequency modulation. Some lieutenant asks what's that. COMM O explains that it means the radio won't have any static. One FM radio can talk to any other FM radio, as long as they're on the same frequency. Then he says the PRC-6 is for the company command net. Each rifle company gets 12 of them. Before they get them, the mechanics at battalion or regiment will have set them on the same frequency. Those mechanics are the only people who can change the frequency."

"What were you doing all this while?" Grube interrupted.

"I was demonstrating the radio and showing how to use the handset."

"What handset?"

"The radio has a handset that can be taken off or put on any time you want. But when you're using it you can't use the built-in transmitter-receiver. It's either or."

"Sit down and tell me more," said Grube. "You're getting to be a regular little genius. I wouldn't mind throwing this mimeograph machine into the river and getting a communications job myself."

"Then the COMM O explained the company net," said Cpl Robertson. "There's one PRC-6 for the CO, one for the exec, one for each platoon leader, one for the recoilless rifles, and two for the mortar section. 'But you say you got 12,' says some joker. 'That means you got three radios left over.' 'Right, says the COMM O, 'Those three are for replacements.'

Figure 1. SCR-536 (old) and AN/PRC 6 (new).

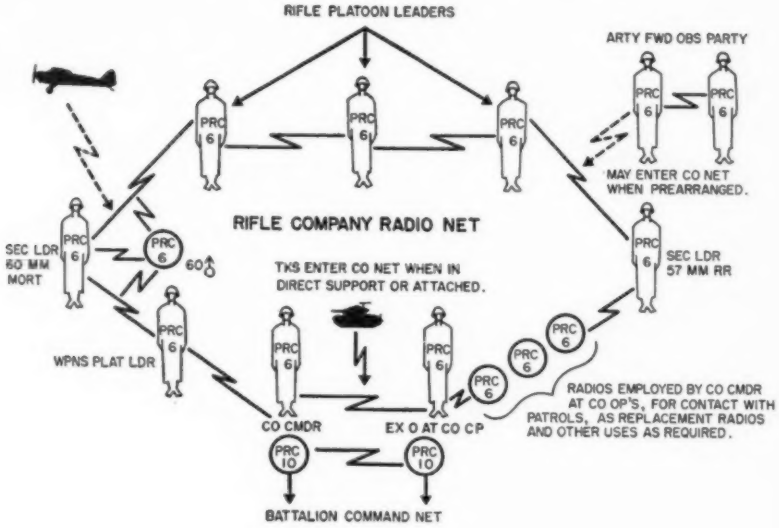

RIFLE PLATOON LEADERS
ARTY FWD OBS PARTY
PRC 6
MAY ENTER CO NET WHEN PREARRANGED.
RIFLE COMPANY RADIO NET
SEC LDR 60 MM MORT
60
TKS ENTER CO NET WHEN IN DIRECT SUPPORT OR ATTACHED.
SEC LDR 57 MM RR
WPNS PLAT LDR
RADIOS EMPLOYED BY CO CMDR AT CO OP'S, FOR CONTACT WITH PATROLS, AS REPLACEMENT RADIOS AND OTHER USES AS REQUIRED.
CO CMDR
EX O AT CO CP
PRC 10
BATTALION COMMAND NET

Figure 2. Rifle company radio net.

"You shoulda seen that meeting," the corporal went on. "I've never seen a place so quiet. Those officers have been hearing a lot about the new radios, just like us, but now they could see them and get the straight scoop on them."

Grube had stopped working and was sitting down to listen.

"The COMM O pointed to a chart of the company net, showing how the company commander can talk to the platoon leaders, and the platoon leaders can talk to each other. The two radios with the mortar section are for controlling the employment and movement of the mortars. When the mortar FO wants to send a fire mission to the gun positions, he won't use the radio net. (Figure 2.)

"Then Captain Johnson, the CO of F Company, asks what about supporting arms like artillery, tanks, and aircraft, and the comm o was right on the ball. He says the artillery FO will have two PRC-6's that are organic to the artillery. When the FO is going to operate in a company sector, these radios will be set on the frequency of that company. He's got another radio to get in touch with his FDC. Tanks and aircraft have bigger radios that can tune in on the frequency of the company they're working with when they want to. That way, if a regimental commander is making an air reconnaissance, he can contact any of the front line companies."

"Boy, you got a memory like an elephant," said Grube.

"I got to remember this stuff. I want that job," said Robertson. "After that they began talking about the AN/PRC-10, the battalion radio that's replacing the old SCR-300 (Figure 3). The COMM O explained that the battalion commander will use it to talk to his command post, his rifle company and heavy weapons company commanders and command posts. It will also be used within the heavy weapons company, the heavy mortar company, the regimental I&R platoon and counterfire platoons. Each battalion communication platoon will have a number of spare or utility PRC-10's to be used wherever the commander requires."

"Sounds like a useful radio," said Grube.

"You're not lying. Well, right after that, the CO of the 1st Battalion asked the comm o why the SCR-300 was being replaced.

" 'One major reason,' said the COMM O, 'is that the new radio is lighter and smaller. The PRC-10 weighs 26 pounds which is 12 pounds less than the SCR-300; and it's only half as wide. Its range is 5 miles, against 3 for the SCR-300; it can tune in on 170 different frequencies, while the SCR-300 could only get 41.

" 'With 170 different frequencies, you can get almost anyone you want who's within range, just by twisting the dial. It's easy to see that you have to be careful not to interfere with other communication. Proper operating procedure must be used, and everyone's got to realize that only one person can talk at one time. The signal operating instructions issued by division to regiment and then to battalion will prescribe the nets in which you can operate.'

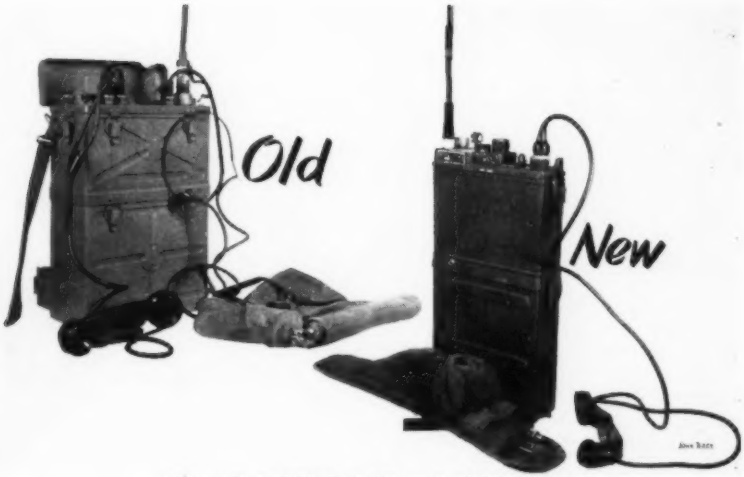


Figure 3. SCR-300 (old) and AN/PRC10.

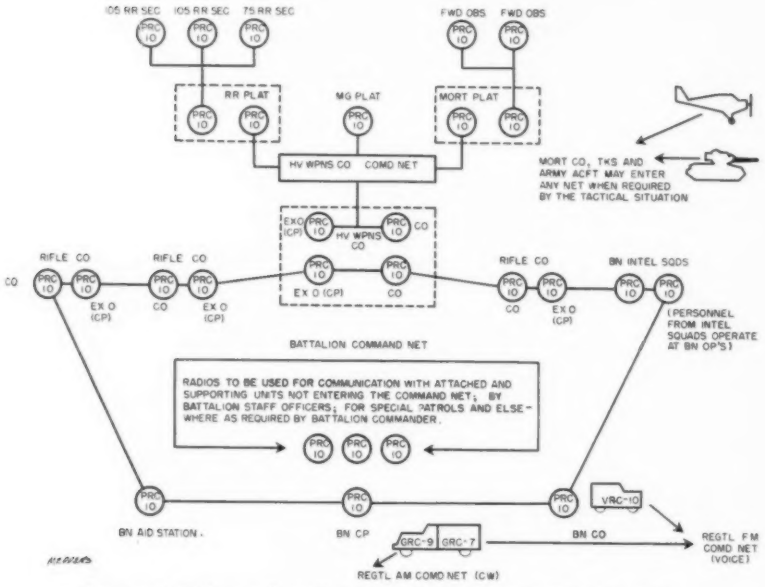


Figure 4. Infantry battalion and heavy weapons company nets.

"After this the battalion commander asked how many of these radios he'd be getting. The answer was that the old ones were being replaced on a one-for-one basis. That would mean battalion headquarters would get ten. Each rifle company will have two, while the heavy weapons company gets fourteen. Then the COMM O showed on charts the four major radio nets in battalion that use the PRC-10. (Figure 4.)

"Then the questions really started," Cpl Robertson continued. "One of the 81-mm mortar platoon leaders asked how can a rifle company commander call for mortar fire if he is out of contact with the mortar forward observers.

"The COMM O replied, 'The rifle company commander can tune his AN/PRC-10 on the frequency of the mortars and check into the net.'

"The next question came from the CO of the 2nd Battalion. He asked how can a rifle company keep in touch with a section of recoilless rifles that is attached to it. The COMM O replied that the section would use its AN/PRC-10 to operate in the net of the company to which it is attached."

"What about the heavy mortar company?" asked Grube.

"Glad to see you're thinking, soldier. "I was just getting to that."

"Call me corporal. I made it yesterday. You want a cup of coffee?"

"Yeah, thanks. Nice going. Now like I said, the heavy mortar company's radios are being replaced on a one-for-one basis. This big difference is going to be that the greater range of the PRC-10 will mean that the distances between observers and gun positions can be increased when necessary. They had a chart of the heavy mortar company net at the meeting, too. (Figure 5.) The same goes for the regimental headquarters company. The I&R platoon, counterfire platoon, and communications platoon in this company will get the new radio on a one-for-one replacement.

"That took care of the company and battalion radios. The rest of the meeting was to talk about the new regimental radio. It's called the AN/GRC-7, but it's really three radios in one. It has two receiver-transmitters, and one auxiliary receiver. (Figure 6.) It also has an interphone amplifier for communication between crew members of a tank."

"Sounds complicated," said Grube, handing Robertson a cup of coffee.

"It's not, when you think about it. I'll give you an example the COMM O gave. Let's say the radio is in the regimental commander's vehicle. He is visiting one of his battalions. While he is traveling he wants to stay in touch with three different elements: his command post and the other battalions of his regiment; division; and his S-3, who is making an air reconnaissance in an Army plane.

"Here's how he does it. He has his radio operator set the 'A' set on the operating frequency of the regimental command net. A chart of that net will show that he is then in contact with all the major elements of his regiment. (Figure 7.) The 'B' set is tuned to the frequency of the aircraft net, so he can talk to the S-3 when he wants to. Meanwhile, the radio operator has set the

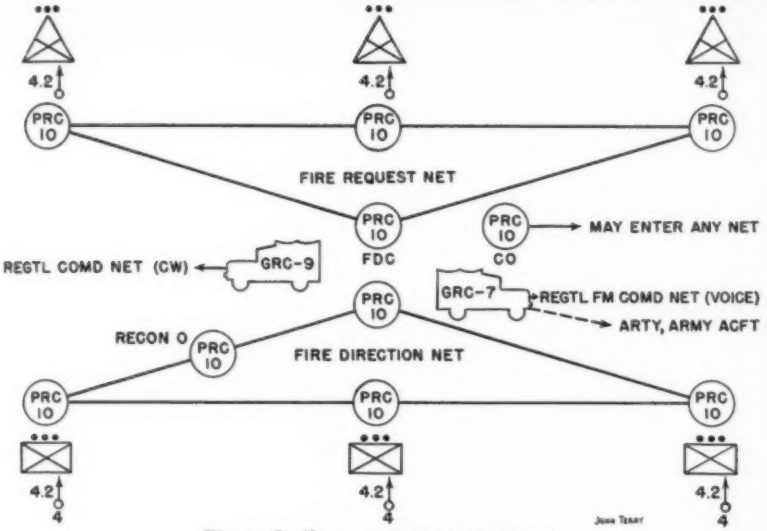


Figure 5. Heavy mortar company net.

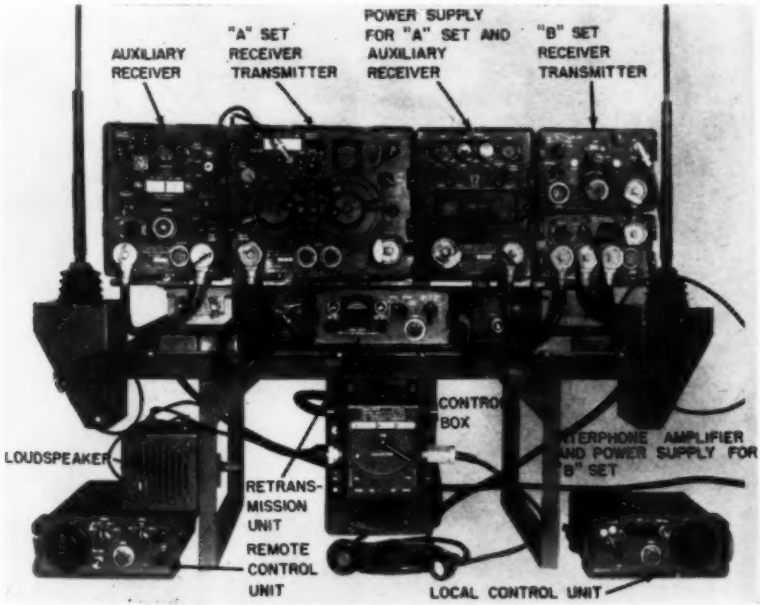


Figure 6. AN/GRC 7.

auxiliary receiver on the frequency of the division command net. If a call comes in from division, the regimental commander will be able to answer personally. We had a chart of the division net at the meeting; it showed how the regimental commander would be in contact with the major elements of the division. (Figure 8.)

"The next question came from the regimental commander. He asked how would he be able to answer a call from division since he only had an auxiliary receiver to keep in touch with that net. The COMM O answered that he could answer the call by having the radio operator switch the 'A' set to the division frequency when that was necessary.

" 'How long will it take to do that switching?' asked the regimental commander.

" 'You switch the dial from one channel to another just by twisting it like your radio at home,' said COMM O. 'It shouldn't take more than five seconds. The radio operator would at the same time switch the auxiliary receiver to the regimental command net, so that you would be monitoring all of the radio nets all the time.'

"The regimental commander wasn't finished asking questions. 'If all those people call me at the same time I'd need three months to talk,' he said.

" 'In that case your operator would tell two of the stations to wait until you can continue your conversation with them,' answered the comm o.

"The next question came from the CO of the tank company. He asked if he would have one of those radios in each of his tanks. The COMM O told him to hold up a minute. He reminded everyone that the parts of the AN/GRC-7 could be used separately. Different combinations of parts can be used for specific missions. Different groupings of these parts, or components, have been given different names. I'll give you some examples. Here, I jotted them down on a piece of paper to remember."

"Let's see, said Grube. "Looks like you're going to make a good radio man."

"Thanks, pal. Now here they are. First there's the AN/GRC-8. It consists of the entire radio less the auxiliary receiver. In other words, it's the two receiver-transmitters. It's used by 'fighting tanks.' Command tanks use the complete AN/GRC-7.

"Next we got AN/VRC-10. It consists of an 'A' set with power supply. It's the vehicular radio used by the battalion commander.

"Then there's the AN/VRQ-3. It has two 'A' sets with power supplies. It's used by the regimental communication platoon as a special-purpose radio.

"After the COMM O had gone through that stuff, the tank CO got up again and asked for a better explanation of how these radios would be used in his tanks. The COMM O showed a chart of the tank company nets. (Figure 9.) Here's how he explained it. The fighting tanks have to be in two different radio nets. One net is between the platoon leader's tank and the other tanks. The other net is between the tanks and the Infantry units. That's why they use the AN/GRC-8. The 'A'

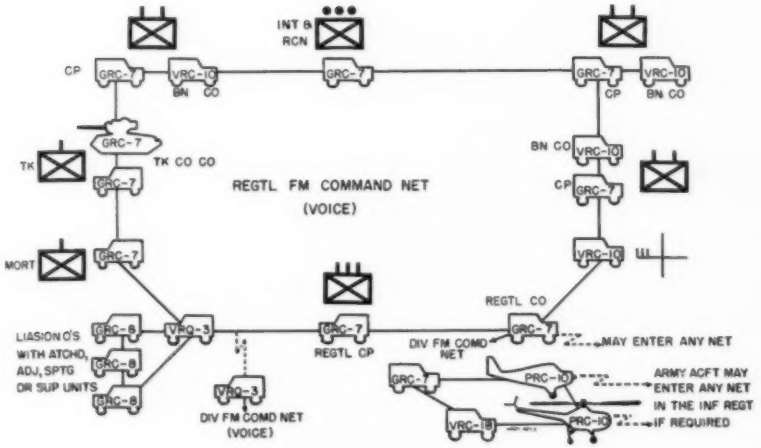


Figure 7. Regimental FM command net.

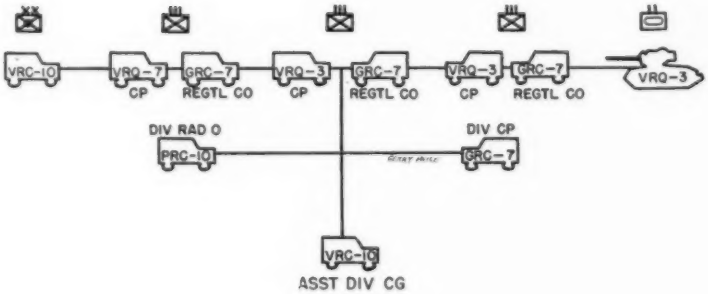


Figure 8. Division FM command net.

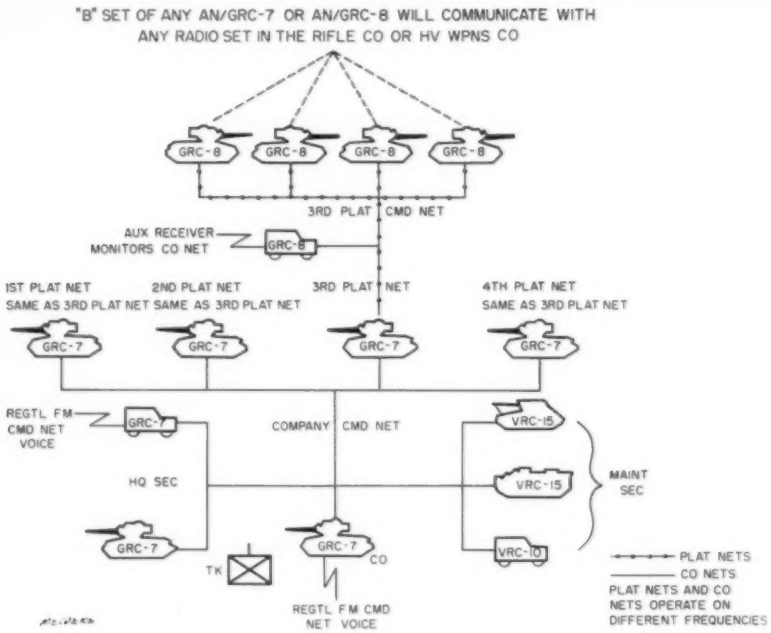


Figure 9. Tank company net.

set would be used in the tank platoon command net and the 'B' set in the net of the Infantry unit being supported.

"The tank platoon leader would use one radio set to stay in touch with his own tanks, and the other for the tank company command net."

"Boy, my coffee's gone cold," said Grube. "You know, I like the ideas of those interchangeable parts in that radio. I'll bet it makes replacing or repairing the radios a lot easier."

"That's right," said Robertson. "They brought that up in the meeting. I forgot to tell you. Well, the meeting ended just about then. The COMM O explained that the AN/GRC-7 would be issued by the name of the specific groupings, like AN/GRC-8 and AN/VRC-18. That last one's the AN/GRC-7 less the 'B' set and interphone amplifier.

"After that there weren't any more questions, so the old man — that's the colonel, I mean — summed the thing up. He said the Infantry now has three new radios, and two of them can be used and carried by foot troops. He was talking about the AN/PRC-6 and the AN/PRC-10. He also pointed out that the AN/

GRC-7 is really several radios that can be made up to suit different needs.

"He said the meeting had cleared up any hazy points on the new radios and their characteristics. The important thing, the colonel went on, is to operate and employ those sets properly. If that is done, we'll have a dependable and flexible tool to control our units. He said that there are only four different types of radios in the Infantry regiment. Three of these, or all the voice radios, are being replaced.

"When you look at these charts of the radio nets, you can see that there is communication from the platoon leader through the chain of command right up to division. The radios are designed to fit the needs of specific-type units. The radios that can be carried easily are assigned to those units that do not have transportation and who don't need long-range sets.

"That was all. Everyone left the meeting looking pretty glad they'd come. I think they really wanted to know that stuff. They got it straight from the shoulder all right."

"I'd better get back to work," said Grube. "We been chewing the fat for an hour."

Cpl Robertson got up to leave. "Okay, I'll be back when you start making better coffee. I guess I'll start working with the battalion communication platoon next week. I'll let you know if there's an opening."

Grube went back to work. "Thanks, pal," he said.

Atomic warfare is bad enough; biological warfare would be worse; but there is something that is worse than either. The French can tell you what it is; or the Czechs, or the Greeks, or the Norwegians, or the Filipinos; it is subjection to an alien oppressor.

— Elmer Davis

GET THE MOST FROM YOUR

Mortars

CAPT LYMAN H CLARK

"I think we should re-examine our 60mm mortar doctrine. It's my opinion . . ."

HOW SHOULD THE COMPANY commander employ his 60mm mortars in the attack? This is the subject of one of today's greatest tactical controversies.

Our current doctrine teaches that in the attack 60mm mortar squads are usually placed in direct support of, or are attached to, the assault rifle platoons.* Present teaching indicates that when the company commander cannot see the entire route of advance for his platoons from the line of departure to the objective, he should attach the mortar squads to the attacking rifle platoons.

I think we should re-examine this doctrine. It's my opinion and that of many others that the normal (or usual) employment for the 60-mm mortar section should be general support. Certainly there are special cases where attachment must be used, but if current doctrine is taken literally, the only time 60mm mortars could ever be in general support during an attack would be in desert warfare.

Current doctrine states that good observation and control are usually impossible to obtain when the mortars are in general support. I believe that this is an exaggeration. In most cases the advantages of general support far outweigh any disadvantages. However, let's not deal with sweeping generalities but let's consider what a company commander must think about before deciding HOW to use his mortars.

The company commander must consider several factors. They are: the enemy situation, friendly situation, mission of the company, status of ammunition supply, observation and limitations of terrain, and his communications and difficulties in maintaining control. In light of the current controversy, we will consider each of these carefully.

Enemy Situation. The plan of maneuver is directly influenced by the enemy's strength and disposition. It follows logically that the enemy situation (and the plan of maneuver) will dictate to a considerable extent how the 60mm mortars are to be employed. Under exceptional circumstances they may be used to participate in the preparatory fires. They will more normally be employed to support the company's plan of maneuver during the actual attack. The company commander must plan his mortar fire support to cover the advance

* Change 1, 16 Oct. 1950, to FM 7-10, page 7.

of the company from the LD to the objective.

Targets that have been definitely located can be taken under fire immediately or when the need arises, provided they are targets suitable for the 60mm mortar. Three mortars in general support of the company will, in my opinion, be more effective than one mortar attached to each assault platoon, both for preparatory fires and while supporting the actual attack. The more information the commander has about the enemy, the better he can use his mortars to protect his flanks, break up enemy counterattacks, and cover his reorganization on the objective. For missions such as these, general support provides considerable flexibility and overall effectiveness.

The Friendly Situation. This must be considered with particular attention to the overall unit fire plan. The company commander must understand how the regimental commander intends to use his supporting artillery and 4.2-inch mortars. He must know the location and duration of preparatory fires, as well as the priority of these fires. He must also know what fires are available on call, and how the battalion commander is going to employ the 81mm mortar platoon.

The company commander must remember that some or all of this planned fire support may be shifted to another unit with higher priority just when he needs it. In such a situation, if his 60mm mortars are attached to the platoons and out of his control, unnecessary casualties may occur. If, on the other hand, the mortars are in general support, he can usually accomplish the mission with his own supporting weapons.

The Mission of the Company. The company mission must be considered in relation to the distance to the objective, the width of the company front, and the range of the mortars. If the objective is within mortar range, the company commander may keep the mortars under company control, occupy firing positions, and displace by echelon. This will permit the mortars to support the assault platoons on call and to engage targets of opportunity.

However, if the distance to the objective is great, the zone of action wide, and the enemy situation obscure; the mortars may be attached to the attacking platoons. This situation is, I feel, the exception. Under normal conditions the company commander weakens his fire plan when he attaches the mortars. Attachment will prohibit flexibility of fires, the primary tactical capability of the weapon.

Status of Ammunition Supply. Experience indicates that the supply of mortar ammunition frequently becomes critical. Because of this ever-present possibility, ammunition supply is an important factor in planning fire support. The supply situation may not dictate the method of tactical employment, but a shortage of ammunition will necessarily influence both the type of targets to be engaged and control of the ammunition expenditure.

When the mortars are attached, the company commander cannot control the type of targets engaged

or the number of rounds used. He can, of course, withhold mortar ammunition from a squad that has fired its allotment, but this is a dangerous expedient. Certainly, the company commander can exercise better control, supervision and supply economy when the mortar section is in general support.

It is a tremendous advantage to have the mortar firing positions easily accessible to carriers and, where possible, close to the company supply point. If the ammunition has to be hand-carried, it would then be over only a short distance. An attached mortar squad frequently has to carry ammunition on the move, and often moves so far forward that carriers are unable to get near them. In this event, resupply has to be accomplished by hand-carrying parties. This is time-consuming and, if not supervised carefully, presents problems which can (and do, in some cases) prevent that mortar squad from giving effective fire support.

Observation and Limitations of Terrain. The nature of the terrain will determine how much observation will be available. Good observation allows the commander to plan fires more accurately, to engage targets of opportunity and adjust and mass fires.

Current doctrine teaches that the only time to employ the mortar section in general support is when we have observation over the entire company area to include the initial objective and can fire from one position area. This principle permits observation alone to dictate the method of employment.

Observation of the type mentioned above is rare. There are numerous valid reasons for using general support when observation is poor. Timber, vegetation, draws, ravines, and other obstructions that would prevent observation in the company zone when general support is used would likewise prevent observation by an observer for an attached mortar. In such a case the attached mortar squad would have to move with the forward elements of the rifle platoon. Why? Because poor observation would prevent its remaining in one position for any long period of time.

There are numerous instances where it would be feasible to use general support even though observation may not be good. When the company commander can observe all or part of the objective but none of the route of advance, he may keep his mortars in general support. He might do this when he thinks that the area he can see offers the greatest threat to his company.

Communications and Control

According to Change 1 to FM 7-10 the difficulty of maintaining control is one reason for the current thought that 60mm mortars should be normally attached to rifle platoons rather than placed in general support. I don't believe this view is entirely valid.

This "difficulty of maintaining control," I assume, refers to the difficulty of maintaining fire control with our present communications, since it seems rather obvious that physical control and supply are both facilitated by general support.

Now it's true we do not have a fire control net (radio) as such in the Infantry company. (We won't discuss wire because its use in an attack is rather limited. It may be used from an OP, or OP's, to the mortar position when the section is in general support.) Regardless of the tactical employment of the 60mm mortars, calling for and adjusting fire by radio will prevent use of the command net for its designated purpose. General support (with its centralization of control) would materially reduce the use of this net for fire control purposes.

In many instances it becomes necessary to operate more than one observation post for the mortars. If the mortar squads are attached and the platoon leader of each platoon has to use radio for communication with the attached mortar squad leader, the entire company command net is rendered ineffective unless a strict radio priority system is inforced. Under general support, one or more observers can adjust the mortar fire without overtaxing the radio net.

The company commander not only has fewer units operating on the radio net when the mortars are in general support, but he has a far greater degree of physical control over the section. He is able to use the mortars to protect his flanks during the attack or, for that matter, to rapidly shift fire where it is needed. In my opinion, any doctrine which habitually removes a **supporting** weapon from centralized control is a dangerous one.

General support permits the company commander to take maximum advantage of the communications facilities of his company. Often the only possible means of communication between an attached mortar squad leader and the platoon leader is personal contact. But our communications system should, if handled wisely, be capable of supporting the best tactical employment of our weapons. We should not have to sacrifice any advantages of a weapon because of an inadequate local communication system.

* * *

All of these factors must be considered when deciding the employment of the 60mm mortars. Today's teaching stresses the importance of observation at the expense of other equally important considerations. Observation is important, but it should not, in my opinion, necessarily dictate how we employ our company mortars. Attachment of a mortar squad to a rifle platoon does not automatically improve observation in the company zone. It merely places a mortar squad under the control of a platoon leader.

I have difficulty visualizing just what type of targets a single mortar could engage effectively while moving with a platoon that could not be handled by the weapons organic to the platoon, plus the habitually attached 57mm recoilless rifle. A mortar squad moving with a platoon that is taking advantage of cover and concealment would have difficulty finding mask clearance, defilade, and observation.

We must also take into account the volume of fire needed to neutralize targets, and the fact that gunnery can best be performed when the crew is in complete defilade. A company commander's knowledge of the enemy will often

cause him to plan fires which can be delivered only if general support is used, regardless of the degree of observation over the company area. Or he may have to employ the mortar section in general support to protect a flank or to cover a gap between units.

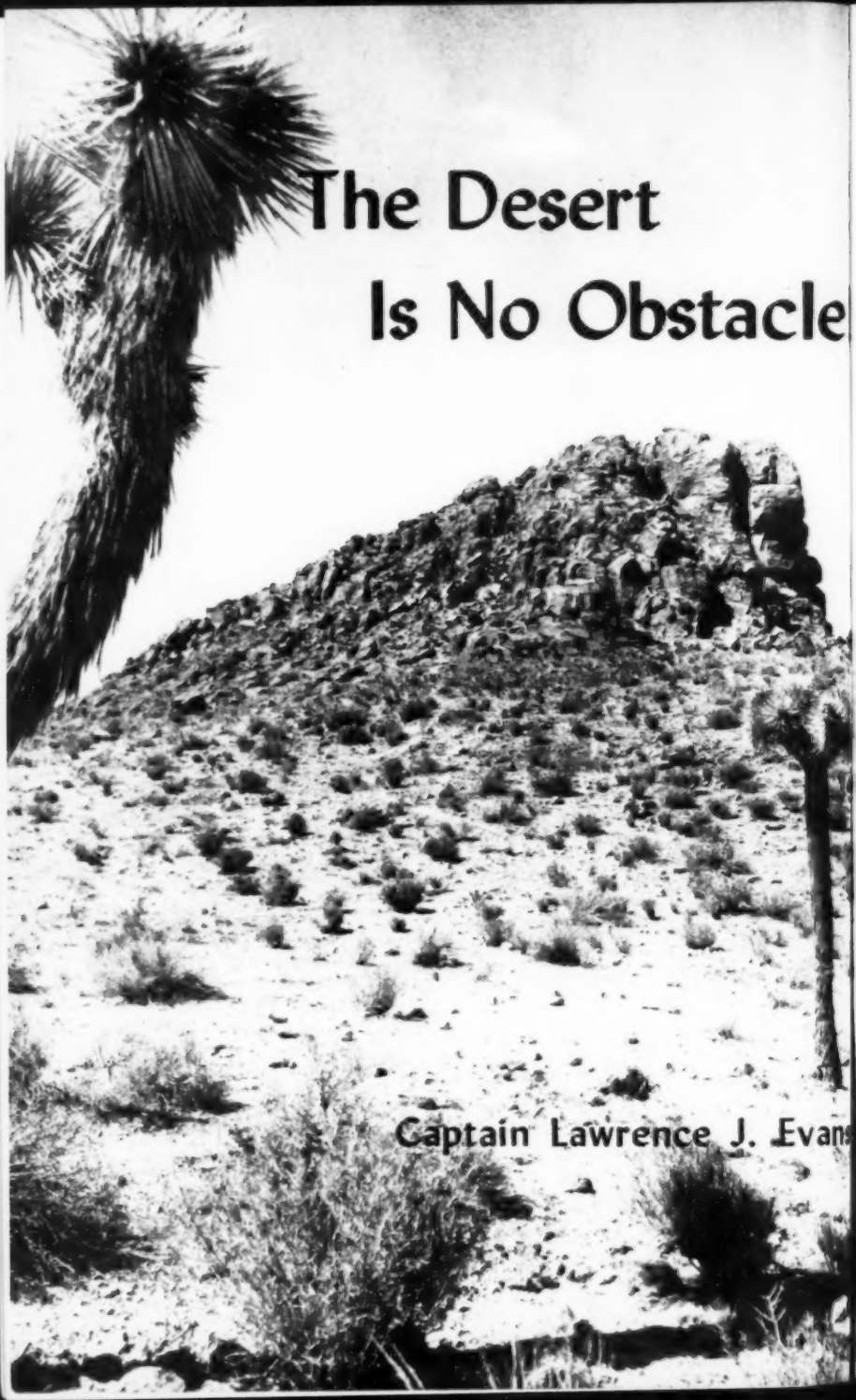
Most important, the company commander has to consider his entire company and its mission. If the company has a special type mission, with one platoon operating out of range of the mortars, then the mortars should logically be attached. However, in a normal or more usual type mission, we gain flexibility by keeping the mortars in general support. The company commander should use the mortars within the limits of their capabilities to counteract the greatest threat to the accomplishment of his mission.

Maximum support from the mortar section should be obtained under all circumstances. Attachment should be used in those situations where it is needed to strengthen the fire support plan. I feel, however, that general support should be used as the normal method of employing the 60mm mortar section. General support permits flexibility, facilitates supply, provides ease of control and afford continuity of support. This is, of course, my opinion, What's yours?

The publication of this article is not to be interpreted as reflecting the thought of The Infantry School or THE INFANTRY SCHOOL QUARTERLY.

The whole art of war consists in getting at what is on the other side of the hill.

— Duke of Wellington


The Desert
Is No Obstacle
Captain Lawrence J. Evans

We must make greater use of "dead reckoning."

"AND I contend that the desert isn't an obstacle."

"You do, eh!" said my friend, who had served in North Africa during World War II. "Well, if that uncharted piece of real estate isn't an obstacle to movement, I don't know what is! Both men and units can get lost — lose their sense of direction. Why I'll. . . ."

"Don't do anything drastic," I said. I could see that my friend was upset over my sweeping statement.

I don't believe you'd be interested in all the conversation that followed, but it will suffice to say that I stuck my neck out and went on record as saying that "ground navigation," especially by dead reckoning, in desert terrain, should be taught in every Army map reading course.

Definition

Dead reckoning is a method used to establish the location of a position(s) by recording and plotting direction(s)* and distance (s) from a known starting point. If we break this definition down we find that in moving across poorly charted, uncharted or featureless terrain ground location(s) can be determined relative to a known starting point by accurately recording the initial direction of the route from the known starting point and the distance traveled to the first change of direction. After this, each change of direction and the distance traveled is recorded.

On a normal compass course, you work from one observed point to another. In dead reckoning you substitute time (and distance) for the observed point. The entire process will be explained as the method is discussed in detail a little later.

What makes dead reckoning so important to a soldier? Let a world map answer this question. Take a long look at a map of the world. Now pick out the vast areas of the subarctic, the trackless jungles of the Pacific and the great desert areas of Asia, the Middle East, and Africa.

Many of these deserts, for example, have been used as caravan routes for centuries. From time to time throughout history they have been used as military highways. Tamerlane and Genghis Khan traveled them. We in the US Army had our own experience with the deserts of North Africa.

Travel is difficult in such areas because of the featureless nature of the terrain and the absence of accurately charted maps. The seaman has long used "ocean" naviga-

* This is based on the assumption that the magnetic compass can be used with normal accuracy. Where magnetic deviation exists it must be considered and, when necessary, compensated for in all computations.

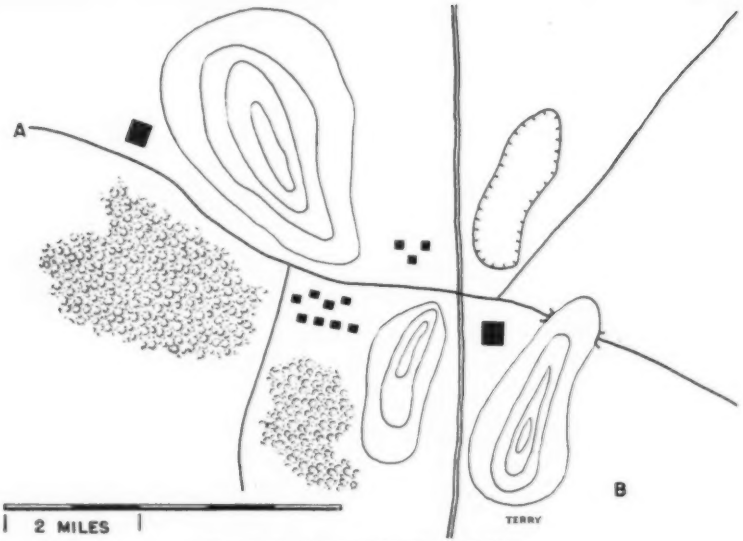


Figure 1. Accurately Charted Map.

tion (dead reckoning) to steer his course across the featureless oceans. The airman, who must frequently fly blind due to weather or the nature of his mission, must resort to the same method.

My friend's remark that "both men and units can get lost — lose their sense of direction" is true. To avoid the specter of failure, we must learn how to understand and use dead reckoning. This method can save time, prevent confusion, prevent loss of direction, and insure success. That's why it's so important.

Use of Accurately Charted Map

In order to better understand dead reckoning, it's worthwhile for you first to examine an example of accurately charted terrain. A glance at Figure 1 clearly indicates that getting from point A to B is not particularly difficult. Why? Because you have accurately charted landmarks to guide you — such things as houses, trees, hills and crossroads. On this terrain you can observe definite points along the proposed route and easily rely on both map and terrain.

Dead Reckoning

Now look at Figure 2. A and B remain in the same position as in Figure 1, but there the similarity ends. Figure 2 represents uncharted or actual featureless terrain. In either case you have nothing to plan or guide on and no points of reference along the proposed route of march. Figure 2 might well be a stretch of desert or arctic wasteland.

The first problem that confronts

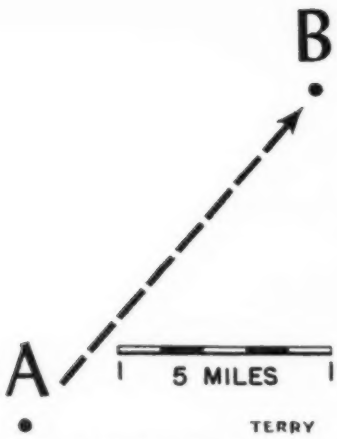


Figure 2. Uncharted or Featureless Terrain.

you on terrain such as shown on Figure 2 is how you are to maintain your **direction.** The area to be crossed in Figure 2 is one vast blank, so far as guide points are concerned. You do, however, have one known feature, Point A, your starting place. Your initial azimuth can, of course, be obtained from a map, an operations order, or an administrative order. This in turn will give you the direction of your objective, Point B.

Your next problem is one of **distance.** Once you depart from point A there are no landmarks on the terrain from which you can measure the distance back to A. But there is a solution to this problem.

Solutions to These Problems

In discussing the solutions to these problems we'll have to deal with certain specifics. Let's start with **distance.**

Distance: Every vehicle in the Infantry Regiment has a mileage gauge which measures the revolution of the wheels and translates it into distance, usually miles and tenths of miles. Readings taken from the mileage gauge are recorded at the beginning and the end of a traverse.* The difference between the two readings represents the distance of the traverse. If the march distance is not great and the unit involved is company size or smaller, the simplest method of measuring the distance is by stride (or pacing). To do this every man in the unit must first determine the "average" length of his stride** over a measured course. On the actual march he must keep track of the number of strides; by multiplying this number by the distance per stride he can derive the total distance. For example: if a man determines his average stride to be 1 yard and takes 1760 strides while marching, he has traveled 1 mile.

If you're on a motor march and find it impracticable to use the mileage gauge because it's inaccurate, broken, missing or measured in miles instead of kilometers, or if it's a foot march of considerable length, you substitute a **time** element in place of **distance.**

It is not difficult to see that if you travel from a known starting point at 30 mph on an azimuth of 32 degrees, after forty minutes you will have covered a distance of 20 miles.

* A plotted course or series of courses, each measured both as to direction and distance from a known starting point.

** Stride. The average distance covered by every other step and is equal to two paces. Pace is the average distance covered by each step.

That, basically, is dead reckoning. You have a known **direction;** and you establish **distance** through the medium of **time.** Again, when on a foot march and no other means are available or feasible, you may have to plot by estimating the rate of travel. There is no mileage gauge built into the human body but you can always use the Rate of Movement Tables** which are used by students at The Infantry School. In these tables you find that while marching cross country during daylight, troops march at a rate of $1\frac{1}{2}$ miles per hour. With this information you can estimate the distance covered by recording the time between the start and finish of any given traverse.

Log

The above methods are not enough, however. A written record or log is an absolute must in ground navigation by dead reckoning just as it is with ocean navigation. The information in the log makes it possible to trace on a map or construct a map of the exact route which has been taken — from the known starting point to the intermediate or final objective.

To be of value the log (written record of the route or routes traversed) must contain the following minimum essential data if precise plotting of the traverse is to be made:

1. Location of a known starting point.
2. Distance (computed by one or more of the following).
   a. Stride (or pace)
   b. Mileage gauge indicator
   c. Time
   d. Estimate
   e. Any other means of determining distance
3. Direction.
   a. Magnetic azimuth for each traverse.
   b. Magnetic declination for the area.
   c. Magnetic deviation caused by vehicles (if vehicle is used) or deviations due to known disturbance of the earth's magnetic field within a particular area.
4. Any pertinent remarks that might affect the plotting of the traverse.

Navigating A Circuitous Route

We find that dead reckoning (see Figure 3) can be applied, no matter what the nature of the terrain may be; and it makes no difference whether the route is straight or circuitous. However, it is particularly applicable to normal desert terrain where wadies, fissures, deep cuts, volcanic areas, drifting sands and salt marshes all combine to force the navigator to continuously resort to circuitous routes. It is basically the same method by which a ship's captain traces his course on a chart, and knows his position even though the sun and stars do not shine and no land can be seen.

Let us imagine that we are in the middle of a vast expanse of poorly

** Reference Data, Infantry Regiment, 1952, "Table 3, Rate of Movement," The Infantry School, Fort Benning, Georgia, p. 55.

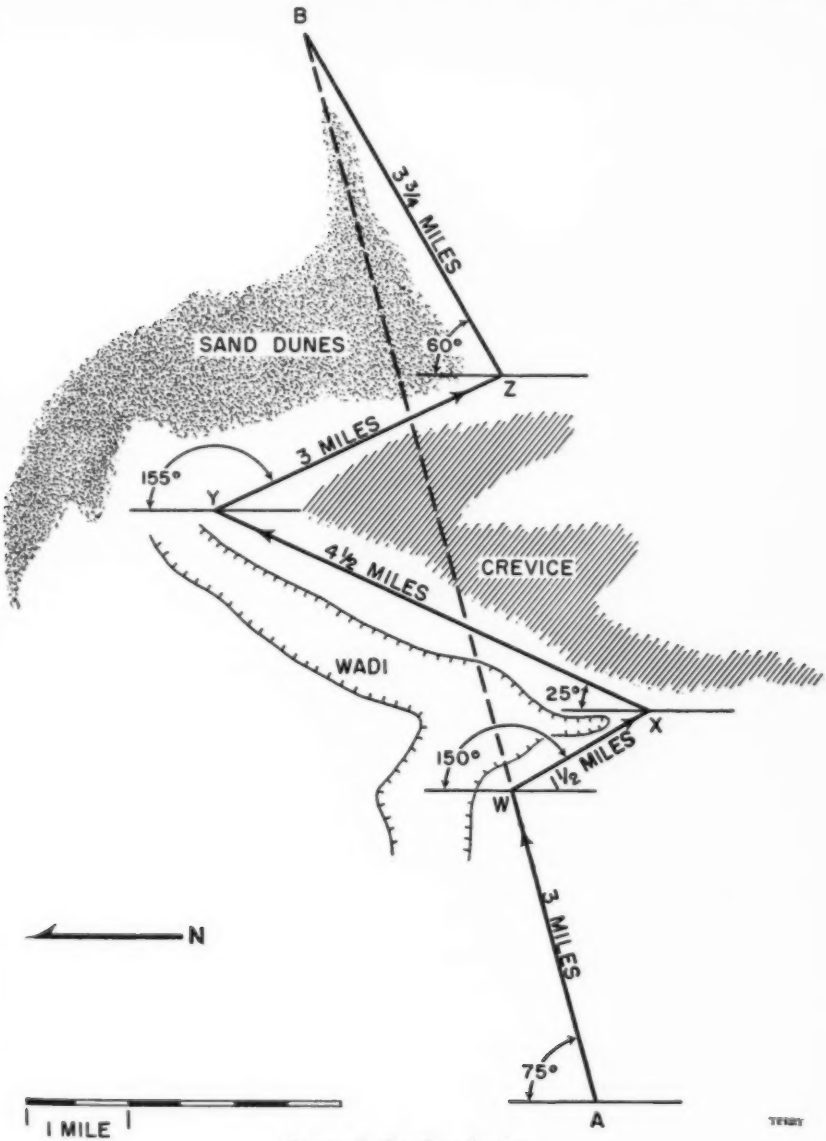


Figure 3. Dead reckoning.

charted, trackless terrain with no visible landmarks. We know that we're at A (see Figure 2) because we have maintained an accurate log of our march route and carefully plotted our position.

Our object is to get to B, $10\frac{1}{2}$ miles away. The question: how is the ground navigator to determine the actual direction and distance to B, IF he has to travel for more than this $10\frac{1}{2}$ miles because of circuitous routing? Again let me emphasize that the terrain is poorly charted. The navigator doesn't have a true picture of the terrain ahead. Any wadies, crevices or sand dunes that might lie ahead are not known nor visible to him. His map shows only A and B as indicated in Figure 2.

Now look at Figure 3. This picture shows all the obstacles to be encountered along the route AB. (As the ground navigator, however, we will not know of their existence until they're reached. Remember — we can't see them and they're not on our map.)

We are at point A. We determine the azimuth from AB to be 75 degrees. The map distance we already measure off as $10\frac{1}{2}$ miles.

We leave A and after marching about an hour suddenly discover a deep, impassable wadi* blocking our further movement on our original azimuth. So we stop at W and carefully record the distance (3 miles) traveled. We must, of course, detour around the wadi in order to get back to our original course. Since X appears to be the end of the obstacle we elect to traverse from W to X.

We now march on an azimuth of 150 degrees (WX). At X we find it possible to get around the wadi. Again we record the distance ($1\frac{1}{2}$ miles) we covered. It is necessary for us to change our direction of march to an azimuth of 25 degrees. This is dictated by the crevice to our right and the wadi on our left. It becomes obvious as we march that we must clear the crevice before we can resume our original course (AB). We record our azimuth (25 degrees) and when we reach Y find that we can get around the crevice. We stop at Y and record the $4\frac{1}{2}$ miles just covered.

At Y we find that our route is flanked on the left by sand dunes. This necessitates movement on a 155 degree azimuth. We record this azimuth. We continue marching for 3 miles (recorded in our log) until we almost clear the dunes at Z.

At Z, however, our reconnaissance reveals that all obstacles to movement have been cleared. We must now determine what direction to take to reach B, our objective. First we must locate Z in relation to B on our chart (or map). This is accomplished by plotting our route from A through W, X, Y to Z. (See Figure 3.) Once the location of Z is established we can determine the magnetic azimuth from Z to B, which in this case happens to be 60 degrees. We travel on this new azimuth, confront no further obstacles and reach B after a march of $3\frac{3}{4}$ miles.

At B we make the necessary entries in our log. When we check the course we originally plotted against the circuitous route it was neces-

* All obstacles and their location as related to our route of march are entered in the log.

sary for us to take, we find that we covered 15¾ miles to reach B which we had originally calculated to be only 10½ miles from our starting point. "Dead reckoning" is, and I believe you will agree, quite simple.

New Developments

You may ask, "Must we depend upon dead reckoning with a magnetic compass, a map, a protractor, and a scale as our only means of navigating deserts?"

At present, the method just described for finding your way — particularly if you are on foot — is perhaps the most dependable. New developments, however, are underway.

For fast mobile situations, the odograph, a completely self-contained vehicular course plotting and position-indicating instrument, may be used. It was standardized and issued to using units in 1949 and is designed for use in vehicles only.

At present the Army is experimenting with a gyro-compass which could be installed in vehicles. The gyro-compass is a non-magnetic, true-north seeking compass which depends upon the force of gravity and the rotation of the earth for its operation.

Then there is the not-so-new art of celestial navigation that has long been used by mariners and aviators. As the name implies, the stars, the moon and the sun are used as guiding points. Although this science is highly technical and somewhat difficult, it can be especially useful as an aid to finding your way in the desert. The weight and cumbersomeness of the quadrant and other paraphernalia, however, would limit this method to mounted troops.

All of these developments are excellent, but as might be expected, will not be distributed to all Infantrymen. They are still machines — machines that may fail to operate at critical times.

In doing research for this article I had occasion to talk with various people. One conversation which I had with an allied officer, a colonel, whose homeland is largely desert, is to the point and worth repeating.

"Colonel," I asked, "how do your people find their way across the desert? Let's assume that you want to move men and equipment from point A, across a trackless area with no landmarks that might enable them to shoot an azimuth for guidance, to point B. The total distance between the two points being 200 miles."

"Hmm! In this case, captain, there is a solution. We use camels."

"Camels?"

"Yes. You must understand that the key, however, is — YOU MUST USE CAMELS THAT KNOW THE WAY."

Since well-oriented camels are not, the last we heard, an item of standard issue, it might be a good idea to consider the business of dead reckoning without further delay.

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Combat and Training Tips

The following unsigned combat information and tricks of the trade have been extracted from Combat Training Bulletins published by the Office, Chief of Army Field Forces. They are reprinted here as background information that will be useful to the combat Infantryman everywhere. The signed items were contributed by readers.

Simulated Attacks

When our shells begin to fall in preparation for an attack, the enemy withdraws into overhead protected bunkers. When our fires lift (the signal is often one round of WP), the enemy quickly mans his fire trenches, throws hand grenades and place small arms fire on the assault troops. To counter this, the following ruse was found to be effective: fire one round of WP toward the end of an artillery concentration on an objective about to be assaulted; cease artillery fire for four or five minutes while firing small arms to simulate an attack; and then open up with a TOT from as many batteries as possible.

Noise Devices

In trench warfare it is advisable to have noise warning devices. One type consists of two empty M1 clips hanging near each other at ankle height. A few pieces of soft wire twisted together and stuck into the side of the trench holds the clips away from the side of the trench and makes it difficult to by-pass them. The device is used to alert men on watch when our own people walk through the trench. The average rifeman will shoot if you startle him by your sudden appearance. It is a good idea to cough or stumble or make some warning noise if a sentry has failed to challenge you and you are getting close to him.

Korean Troops

ROK soldiers assigned to us should be used strictly as fighters. The effort it takes to train them is worth it when they develop. Treat them as US Infantrymen and throw them right into rifle squads or on crew-served weapons. They are eager to learn, and require patience as well as ingenious methods of instruction. To use them as laborers is to reduce your fire power. Also, what better contribution can we make to Korea's military strength than trained and experienced Infantrymen?

The Korean Service Corps or "Chiggies" are a God-send. Having a company of laborers and bearers permits a commander to raise the number of riflemen per company on line.

Richard F. Brown
Maj. Inf.

Reports

Every combat soldier must be able to remember what he sees. He should begin memory training early because it takes considerable practice. Many men are unable to observe properly or to report adequately what they have observed. When sent upon a mission to observe a specified area, it is a good idea to "paint" a picture in your mind of everything you see that will be significant in furthering the unit's aims. Remember that picture and send back an oral or written description of it.

Going to Korea?

Col Edward L. Rowny

A letter to an officer on his way to command a battalion in Korea. He has asked for "lessons learned" to assist him in getting oriented on his new job.

Dear Paul:

You're going to Korea and have asked for advice. I'll spare you the boredom of listening to my "war stories" which, like most, get bigger at every telling. Every one of us learns from what he sees and undergoes in the light of his own prior training and experience. I'll be as objective as possible and relate some of the lessons I learned in Korea. Don't regard my comments as doctrine, but rather think of them as ideas and "lessons" acquired by a regimental commander. Thought of in this way they might be useful.

The first lesson is simple and a rather obvious one — but even the most obvious things often require restating. It's this: the most desirable asset in battle is a determination to succeed. This is particularly true when it becomes a unit attitude, rather than merely a personal one. When men have a will-to-win you are often amazed at the obstacles they overcome and the "impossible" things they can do.

Take a realistic view of the enemy. Consider not only his strength but his weaknesses; it's essential to success in combat. Too many commanders find themselves beaten, not by the physical enemy but by their own preconceived notions about him. It's true that one of the gravest errors a commander can make is to underestimate his enemy, but it's equally true that it's folly to overestimate him.

It is not inconsistent to add that you should avoid being foolhardy. A certain amount of controlled fear appears to be one of nature's psychological mechanisms which serves to protect us. A commander, however, must learn to keep fear to himself. You'll remember reading about General Eisenhower trying to decide whether or not to cross the English Channel for the invasion of France in World War II in the face of conflicting weather reports. Such decisions are best made in "awful solitude." Once made, the commander should keep all his fears and doubts locked within his

own mind. Unless he displays a confident manner he easily "infects" his subordinates with fear and doubt, thereby inviting defeat.

When arriving at a decision, keep affection for any particular individuals or units pushed well back in the recesses of your mind. Too close a tie for any given individual or unit can materially affect making the proper or logical decision. This doesn't mean being ruthless or overlooking the safety and welfare of your men, but it does mean being objective. Consider your problem carefully. Ask yourself, "What would a totally disinterested person do in this situation?" This requires steeling yourself to face the facts, and forces you to risk a few casualties now in the realization that you are preventing a great number later on.

Korea taught me to be extremely wary of previous experience. Too often "knowledge" turns out to be prejudice. Recalling experience without reflecting on the circumstances surrounding a particular success or failure can often be more detrimental than helpful. For example, based on my experience in Italy, I had about concluded that tanks were useless in mountain warfare. In Korea, however, I came to reverse these "conclusions." I learned that the ability of tank commanders and the state of training of the units — not the terrain — made the difference. I joined the others who were enthusiastic about armor and its value in rugged terrain.

On the other hand, the supporting services in Italy were so uniformly good that we came to take them for granted. At times, service performance in Korea surpassed what I had seen in World War II, but rotation often took a toll of personnel. At these times it became necessary to improvise in order to offset the temporary ineffectiveness of those supporting services.

Unit activities require more supervision than most of us are willing to admit. Close supervision is necessary in a large variety of activities, from casualty reporting to the proper conduct of the assault. It must be remembered that rotation — while not to be underestimated from a morale standpoint — is constantly moving out your most experienced officers and men. The answer is to supervise in such a manner that it cannot be interpreted as interference, but rather will be regarded by subordinates as genuine interest in their problems.

Now let's examine a few lessons learned about the enemy. He was neither as cunning, fanatic, stoic and tough as some would have us believe. Nor was he as stupid, ill-equipped, unskilled and inept as others claimed. The truth lay somewhere in between.

Were we to single out the one most significant lesson concerning the Red Chinese, it would be, in my opinion, that he is not easily maneuvered out of position. He may be outflanked or have hostile troops to his rear and still show no apparent concern. This may be because his signal communications are poor so that he can't get authority to pull back; perhaps his instructions would have been the same in any event. Invariably, when he could no longer ignore the threat imposed by our troops, he would bring another unit to his aid, or

fight it out to the finish on the spot. But the important thing to us is that by staying he continued to inflict casualties on our troops. He digs in, uses good camouflage and employs his mortars well. (He seldom fires his individual and automatic weapons or expends hand grenades.)

Difficult terrain seems to be less a barrier to the Red Chinese than to us — in fact, he invariably fights on high ground. The thinness of his resupply effort makes him especially vulnerable when on the move or immediately after occupying a position. Once established on a position he quickly builds up a dispersed stockpile of supplies that give him great staying power. His more important supply installations, however, remain tied to the wellworn avenues of approach, and here he is quite vulnerable.

The Red Chinese seem to follow the Russian doctrine of using preattack assembly areas. When in these areas he seems unable to hide his intentions and becomes highly vulnerable to our air and artillery. He appears to study our dispositions carefully and frequently strikes along a boundary, especially between large units or where UN troops link up with ROKA units. His attacks are of relatively short duration and for limited objectives. While Red commanders show a willingness to sacrifice large numbers of their own men, their unit combat efficiency seems to drop off at an accelerated rate once they begin to suffer heavy losses.

As for our own problems, one of the greatest was the constant integration of replacements. This, as I mentioned earlier, is caused by the heavy turnover created by rotation.

Replacements need physical, mental and psychological conditioning. The comparatively long pipeline and unavoidable delays, even for those traveling from the States by air, create a need for a break-in period of hill climbing. Many of the men will need to review some of the things they had been taught, but have forgotten. Most important of these is a review of weapons technique. Experience has shown that familiarization training in weapons in basic training doesn't qualify a man to take his place as a member of a weapons crew. By psychological conditioning I mean instilling in the man a motivation for combat. This is best done, in my opinion, by operating on the pride he will soon have in his unit. The first essential is to give the individual a feeling of "belonging" to his new unit. He should be impressed with the fact that his unit is a superior one, one that is worthy of his best efforts. The rest follows automatically.

Consider officer replacements. Many appeared unable to plan, coordinate and control fire power. There seemed to be two reasons for this shortcoming. First, they didn't know exactly what fire power was available to them. Second, and more important, they seemed unable to anticipate in plan form their need for great volumes of massed fire power, or to control their fire power through communications, SOPs and visual signals. While The Infantry School has adopted measures to correct these officer deficiencies, it may be some time before the impact is felt. Many

officers showed a tendency to overrate the difficulties of ammunition resupply. Some failed to recognize that resupply, while often difficult, was possible with a little organization, a little Yankee ingenuity, and a lot of sweat. In the highly-planned, limited-objective type warfare which developed after the first year in Korea, supporting fire power became tremendously important — that's why we had to work so hard on the shortcomings I just mentioned.

New officers are prone to calculate the strength of their forces in terms of manpower only. A two-company attack is not necessarily twice as strong as a one-company attack if the same number of supporting weapons in the battalion are used in both cases. When an attack twice as strong was required, our new officers too often merely doubled the number of riflemen. It had to be pointed out that one man supported by two weapons makes a stronger force than two men supported by one weapon.

We learned that it took rigorous action to get our men to take a page from the Communist's book: to dig in and camouflage. We do too little of it and pay for our lethargy with casualties. Encourage digging and bunker construction by providing adequate quantities of "man-sized" tools, and by keeping them in a proper state of repair. Then get stubborn and insist that the work be done.

The fact that the Red Chinese made extensive use of perimeter defense makes a frontal attack out of most small unit "local-objective" attacks. This taught us to advance along the one route where we could capitalize on our principal superiority over the enemy and bring the most supporting fire to bear. We also learned not to be overly worried about enemy to our rear. Our men learned in that first year that a good stick-to-the-book perimeter defense is effective. Resupply by aircraft and helicopter evacuation removed much of the fear of being encircled. The often heard "Who's got who surrounded?" became a popular question as well as a joke.

Remember that strength lies in the supported team. At times individual small unit efforts accomplished amazing results, but more often a well-led team that made good use of fire support was the winner. Periodically, efforts were made to introduce battle drill. While there is no doubt that such drill develops individual aggressiveness, I think that we lose more than we gain when we try to subdivide a squad or to separate a rifle squad from the weapons squad. At no time is this more evident than during the most critical phase of a battle — the assault. Those assaults in which we had the least casualties were made by units which had taught their squads to move forward simultaneously and to keep up a heavy volume of aimed fire as they moved.

The better units in Korea built teamwork by paying special attention to the units giving them support. By attention, I mean making them feel wanted, looking out for their security, and assisting them with their problems. This makes the supporting unit feel that it is a vital part of the team which, in truth, it is. The ideal is reached when units compete for the privi-

lege of becoming attached to your outfit. When this happens, and it often does, you have the feeling of power and well-being that comes from the realization that you are fighting with a real team.

The slow-down in Korea allowed us to devise new techniques and improve some old ones. We had time to plan and study our mistakes. Every unit improved its methods for keeping men alert and active. Supervised, periodic firing of individual and crew-served weapons improved our firing technique and did much to instill confidence in our weapons. And, of course, the necessity for carrying on under difficult conditions of weather and terrain resulted in continuous progress being made in the fields of resupply and evacuation.

Staff work, especially planning, is exceedingly important. Planning simply cannot be overdone. The unit which thinks of all possibilities and plans in detail to meet these contingencies is the one that isn't surprised. And, more rewarding, perhaps, this unit will make the most successful record in combat.

The most fertile field for the development of techniques lies in finding ways to improve morale. The American soldier doesn't want coddling; he can and does face hardship well. On the other hand, he resents living in discomfort just to become accustomed to it. The most contented unit seems to be the one whose commander uses his ingenuity both to make the soldier more effective against the enemy and to make him more comfortable. The first is done in a variety of ways: by improvising methods of training in the front line, by supervising, by varying the pace, and by thinking up novel ways of surprising the enemy. The second is accomplished by constructing warming huts, showers, "bed springs" from salvaged wire, and improvised steam tables for keeping food warm. Our unit even fried eggs to order ten yards behind the front line.

You will hear much about the evils of over-supervision and will be told that unit commanders in Korea become quickly frustrated as a result of superiors "breathing down their necks." This, in my opinion, is an exaggeration. I found a great deal of supervision, but little "over-supervision." The large bulk of the visits and inspections by superiors proved to be highly beneficial. A good unit has nothing to fear. By the same token a poor unit has room for improvement and should be critiqued where necessary. These superiors are experienced, battlewise soldiers who can frequently see things that are missed by those of us who happen to be "too close to the forest to see the trees" or who become obsessed with the idea that we are the only ones confronted with problems.

A parting thought — anyone who concludes that he fought his war in World War II is deceiving himself into believing there's nothing to be learned in Korea. To the individual on patrol or to the unit assigned a "limited objective," it's still an awfully big war. There's much to learn and much to relearn.

Good luck and keep me up-to-date.

Sincerely,
Ed

Of Men and Bayonets

- One man's opinion
- Familiarity with the bayonet breeds confidence.

Major James M. Gibson

YOU'RE AN INFANTRY BATTALION COMMANDER IN COMBAT. You have been ordered to take a certain hill. Your plans are made. From your observation post you see that your rifle companies are ready to cross the line of departure. You call for the planned supporting fires. As the artillery and mortar rounds hit the hill, the heavy machine guns and recoilless rifles join in a deafening roar. The objective is smothered in fire and smoke and you never cease to marvel at the tremendous display of fire power.

Under cover of this fire your Infantry starts up the hill. They get within approximately 150 yards of

the top. You order the artillery and mortars to shift their fires to the reverse slope. The flat trajectory weapons continue to fire as the Infantry deploys and assaults the objective. When their fires are masked, the machine guns and recoilless weapons begin to displace. Things are going like clockwork and you are congratulating yourself on a well-coordinated attack when suddenly — you hear that flat, ripping, violent sound that an automatic weapons makes when it's coming your way. The sharp crack of rifle fire sounds overhead and you see the lead rifleman stop.

Your first reaction is surprise! Surprise that anything could live through the pounding you gave that hill. Next, you're a little angry and vexed with the enemy for still being there. "The fanatical jerks," you mutter. After you're in the business a little while you begin to expect this, and you hold your breath until the first unfriendly rounds are fired. But when you're new you think, "They can't take that and still fight back."

Now, if you feel that way, you can bet that the lead rifleman feels the same — and he stops! He hugs the ground and fumbles with his equipment. His rifle may require reloading or he may be struggling to get the tape off a hand grenade. In any case, as he stops, the entire attack stops with him. It's at this time you begin to take your heaviest casualties.

This presents an exaggerated picture. Certainly troops that are in combat for some time work out their own solution with varying degrees of success. Nevertheless, this business of faltering before closing and taking unnecessary casualties, is common enough to constitute a problem. A problem to which there is no simple or single solution.

Certainly, by these words I don't mean to minimize the importance of our superior fire power and technical ability. We all appreciate the fact that in a war against a foe who outnumbers us, these things will be our salvation. However, I do believe that we would be wise to re-examine that part of the battle that begins at hand grenade-throwing distance of the enemy and lasts until the position has been secured. In particular I point to the use of the BAYONET!

There is no more controversial weapon in the family of Infantry arms than the bayonet. You have heard it said that even within a few yards a .30 calibre slug is quicker and surer than a foot of steel. That no man with a round in his chamber will bother to stick an enemy with the blade. On the other hand there are those who will say:" . . . a man who knows how to use his bayonet won't stop to reload, but will make use of it."

It was desire to have an auxiliary weapon that gave the bayonet its start in 1647. At Ypres in that year the Siegneur de Prupequr had his troops thrust their daggers into the muzzles of their muskets after firing. This combined in one man the functions of the medieval fire team, which up until that time consisted of a pikeman and a musketeer.

During the two world wars all nations participating included the bayonet among their weapons. Fol-

lowing World War II there was a great hue and cry raised against the weapon. "An obsolete, useless thing fit only to open 'C' ration cans and ammunition boxes." "A poor weapon with no combat value whatsoever; bullets are better!" The bayonet and bayonet training in the Army fell into a period of de-emphasis in about 1946. The logic was simply this: if we're not going to use it, let's cut out the training hours spent on the bayonet and employ them on more worthy subjects. Korea — A change.

A great deal has been said about the human-sea tactics of the enemy in Korea. Because of our superiority of fire power, he is very reluctant to make any move, to say nothing of attacking during daylight. He moves against our defenses at night, taking advantage of our lack of observation over the battlefield, and the decreased effectiveness of aimed fire.

The trained American soldier appreciates the fact that he must hold his position at all costs. This is a principle upon which our defense is based. When the enemy attacks en masse and all our supporting weapons are employed against his; when he continues to come through the wire and into our battle position; when the grenades run out and the last round is spent and still he comes — the soldier knows that he is expected to stand his ground and fight with the **bayonet.** Can it be otherwise?

The enemy in Korea rarely surrenders in large numbers and doesn't expect his enemy to. This results in numerous reports of bayonet actions. Now you say, "We fought the Japanese in World War II, and there were very few instances when the bayonet was actually employed." Perhaps that's true; but for the most part we fought him on relatively small islands and in comparatively small numbers. Our tremendous fire power, land, sea and air, drove him underground and immobilized his forces. Again he was destroyed by our fire power (tank fire, flame throwers, grenades, satchel charges and similar weapons). Perhaps I am guilty of oversimplification, but try to envision the type of war it would have been if we had met the Japanese army on the mainland of China. All these factors influence the employment of the bayonet as they do other weapons.

Many criticisms have been and will continue to be levelled at the bayonet. The weight of these is that this weapon has no place in modern war. It is merely kept on through a "die-hard" attitude; an unwillingness to accept change. Yet the evidence is conclusive that the modern Infantryman has need for this weapon. The bayonet will be with us for some time, fulfilling its traditional role. It's not a question of retaining or discarding the weapon, but rather a matter of **properly training** and **indoctrinating** our troops in its use. What we do need is an entirely new approach to our bayonet training.

After World War II the Program of Instruction for our training centers did not include instruction in the bayonet. The private who went into Korea in 1950 had little or no knowledge of bayonet fighting as it was formally taught. In many instances he had never run the bayonet assault course or thrust

at a straw dummy. He didn't know what the word "parry" or "long thrust" meant.

Reports were soon coming out of Korea that a certain Infantry unit had engaged in a bloody bayonet fight with the enemy. Commanders were soon stating that replacements sent to Korea should have instruction in the bayonet. As a result the program of instruction in our training centers was expanded to include these and other important subjects.

We won't go into the details of our present-day bayonet training because it's all found in FM 23-25. Great emphasis, however, is placed on positions, footwork and sequence of movements. Much of this work must be done on a flat open field. In a situation, let us assume, that calls for all rifles to be empty (a necessary safety precaution) the soldier and one or more of his fellow soldiers on the field must parry and thrust at each other. When the soldier becomes familiar with his weapon and is sufficiently trained, it's well to get him off the flat open field into more realistic surroundings.

The average young American, entering the Army, feels that he has some athletic ability. He has played baseball and other sports since he was a child and considers himself agile and able to handle himself.

He will be amazed at his awkwardness when he first starts using the bayonet. It is necessary for the instructor to critique his actions, but it is also necessary for the instructor to build up his confidence. It's well to remind him that dancing, boxing, driving a car and every new sport requires training in the fundamentals which include positions of the hands and feet. As soon as the man masters bayonet footwork and positions his confidence in his overall ability is generally increased.

Too often a man gets "fed up" with the bayonet in his early training because instructors fail to remember their own early clumsy, awkward attempts to master the fundamentals.

Unfortunately, in some units (though not in all by any means), bayonet instruction is poorly scheduled. A man receives an hour of bayonet training, perhaps Monday morning; another hour Thursday afternoon, and he may get a final hour Friday. In some cases bayonet training is not applied to or tied in with the other subjects included in the week's instruction. The soldier is merely taken out on the field and told, "For the next hour we will study the technique of the bayonet." About the only benefit derived is a good physical workout and a pair of skinned knuckles every time he tries to parry left.

This method of presenting the bayonet does not have the desired result. It does not build confidence in the weapon! It does not arouse the fighting instinct of the soldier! It does not teach him how to use it on the battlefield! The will to meet and destroy the enemy in hand-to-hand combat is not the result of this form of training!

How can we train our men to use this weapon to the best advantage? The bayonet is a weapon of opportunity. It is used by the soldier when other weapons fail, or are not present. At the same time it is a "spirit" weapon. Any army con-

sisting of soldiers willing to close with the destroy the enemy with the bayonet is an army imbued with the offensive spirit.

The bayonet is used when the skirmish line sweeps over or into a trench. It is used to maintain the impetus of the attack. It is used inside bunkers or while standing in a foxhole. It is used when friend and foe become so involved that to fire endangers the lives of our own men. The bayonet is used on steep hillsides, in heavy woods and at night. It is rarely, if ever, used on a flat open field during daylight. For the Infantryman, the bayonet must become **"a familiar part of his daily grind."** To do this it must be incorporated into all of our Infantry training.

Early in the soldiers basic training he should be introduced to the bayonet. This introduction should include four hours of indoctrination.

Indoctrination

1. The first hour orientation should include: brief history, general use and employment, arguments for the bayonet (designed to sell the soldier on its value), nomenclature, and care and cleaning (to include use of the knife-type bayonet in other than its primary function).

2. The second hour should consist of a demonstration and practical work of the following modified positions and movements:

a. Guard — position of the rifle employed in assault fire.

b. High port — as a method of running with the bayonet attached to the rifle.

c. Long and short thrusts.

3. The third hour should include a demonstration and practical work.

a. Review previous hour.

b. Add: butt strokes and slashes.

4. The fourth hour should be practical work.

a. Review second and third hour.

* * * * *

During this training no great importance should be attached to the exact position of the feet. Rely on the native ability of the soldier to maintain his balance. Do not use such expressions as: hips facing straight forward and level; left arm slightly bent; or leading knee not sufficiently bent. These and similar statements are artificial and have no real meaning. Emphasize that the position of **"Guard"** is merely a ready or alert position that the soldier has assumed. In combat this may be the position of the rifle in assault fire. If a soldier has just fired his weapon from the shoulder or is running at "High Port" these, in effect, are "on guard" positions.

Several movements are not included in the above suggested training. Leave out the **"whirl"*** and

A revised edition of FM 23-25, "Bayonet," will be published in the near future.

* To omit teaching those portions of the manual mentioned above is not recommended by The Infantry School. — Editor.

again rely on the agility of the individual soldier to turn around quickly if he so desires. The narrowness of the trench or the steep angle of the hill will seldom permit him to do it as presently taught. Leave out **"group assault tactics."*** When two groups of hostile soldiers face each other, some of them are bound to have the bullets in their weapons which will make the fencing and maneuvering of these tactics a little ridiculous, to say nothing of being fatal. The same holds true of the **"parries"*** and the use of the **training stick.*** The bayonet is used suddenly and aggressively. The soldier takes advantage of shock and surprise and gives the foe no opportunity to duel or parry with him. It is sufficient to say for our purpose here, that the **"bayonet and knife disarming"** instruction should continue to be a part of the hand-to-hand combat instruction given in connection with the physical training program.

The bayonet should be included in our physical training program. Becoming accustomed to the weight of the rifle with the bayonet attached and learning to handle the weapon with ease is one of the soldier's early steps toward gaining confidence in the weapon. More use should be made of the **rifle exercises** as outlined in chapter 5 of FM 21-20. This form of physical training should be conducted with the bayonet attached to the rifle. Certainly care must be taken to prevent accidents, but the combination of physical training and confidence instilled in the soldier in handling the rifle and the bayonet would be invaluable. These exercises could be expanded to include a modification of the basic movements outlined above.

The bayonet **"assault course"** as outlined in paragraph 25 of FM 23-25 is sound and should be retained as such. However, every camp and station may not have the time, funds or facilities to construct a bayonet assault course. Any obstacle or confidence course can be used as a bayonet assault course with some improvisation.** Here again the bayonet can be incorporated into the physical training program by requiring the soldier to habitually run the obstacle and confidence course with the rifle and fixed bayonet. Targets should consist of logically placed dummies, preferably movable, so that the course can be altered frequently. The builder should place surprise targets at various points, and suspend dummies to swing out as the attacker approaches. He may hinge others to swing out from behind trees or thickets. He can build thrusting and butt-stroke dummies with four by four inch timbers, set into boarded holes. He can move these dummies by placing similar holes at different points on the course. Each lane should be wide enough to avoid the possibility that one man might fall or stumble into another man's bayonet.*** Before troops run an obstacle course in its

** The present confidence course is made up entirely of events designed to test one's ability and self confidence when permitted to use both hands. Using the bayonet would probably defeat the purpose of the present course.

*** This proposal calls for redesigning of the present confidence course. To make the modifications suggested in this article would be very expensive.

entirety, they should be taken to each obstacle in turn and instructed in the proper technique of negotiating it with the rifle and fixed bayonet. This should be done without showing the location of surprise targets.

The bayonet should be included in our rifle marksmanship training. Every soldier should know that the zero of the rifle is changed by attaching the bayonet. The soldier should be required to fix the bayonet during all firing except "known distance range firing." This would include the transition course, close combat course, small arms fire course, and assault fire course. In running the infiltration course he should be required to carry his rifle with fixed bayonet.

No small unit problem or tactical exercise should be considered complete without employing the bayonet at the appropriate time and place. The bayonet should be included in scouting and patrolling exercises and other related training subjects. Even during parades and ceremonies the bayonet could be used when the rifle is carried.

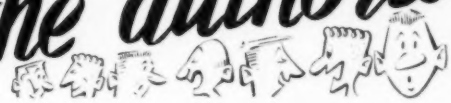
When we really start putting the bayonet on display in training it will soon become something more than a convenient gadget for opening cans which, incidentally is something it was never intended to do. The Infantryman must know the real value of the bayonet. To do this **we must make it a part of his daily training and, consequently, his thinking.**

Publication of this article should not necessarily be interpreted as reflecting the thought of The Infantry School or THE INFANTRY SCHOOL QUARTERLY.

The final test of a leader is that he leaves behind him in other men the conviction and the will to carry on. . . . The genius of a good leader is to leave behind him a situation which common sense, without the grace of genius, can deal with successfully.

— Walter Lippman

Meet the authors



Major Fred Long, author of "Fire As Maneuver" (page 6), was commissioned via Infantry OCS in 1942. After graduation he became an instructor at TIS. Later he attended the Military Intelligence School. He served in China during WW II and in Korea in '46. He returned to Korea in 1950 with the 3rd Division and returned to the States in '51. He is presently assigned to the office of the Director of Instruction, The Infantry School.

Lt Alfred A. Pabst's "Operations Made Easy" (page 15) is one of those articles for which we have a special liking. It is designed to help the Infantry leader in his job in a specific, constructive way. Lt Pabst graduated from the United States Military Academy in 1948. He has served for three years with the 16th Infantry, 1st Infantry Division, in Germany. His present assignment is Chief Infantry Instructor in the University of Michigan's ROTC unit.

Major Edgar R. Fenstemacher, co-author of "From Musket to M1" (page 22), with Lt Webb, received his commission upon graduation from Clemson College. During WW II he was with the 13th Inf, 8th Div and 399th Inf, 100th Div, where he served as a company commander and later a battalion S3. In July of '50 he went to Korea with the 19th Inf, 24th Div. He was wounded during the same month and returned to Korea in October when he was assigned to the G3 Section, 8th Army. He is a graduate of the '51-'52 Infantry Officer Advanced Course (TIS) and is now Section Chief, M1 Section, Weapons Department, The Infantry School.

Lt Eugene R. Webb, now Mr. Webb, was commissioned upon graduating from the University of Illinois in 1941. He served with the 5th Division during WW II and was recalled to active duty in 1951. He was separated from the service last February.

Captain Edward R. Hindman, whose "Forgotten Killers" appears on page 32, is a 1949 graduate of the United States Military Academy and is now an instructor at The Infantry School. Shortly after receiving his commission he went to Korea where he served with the 93rd Engineer Construction Battalion and later with the 65th Engineer Combat Battalion (25th Division). His first assignment, as he writes in his article, was to remove U.S.A.P. mines from the numerous "forgotten" mine fields in the Kumhwa sector. "This experience," he says, "is one I shall never forget and really prompted me to write 'Forgotten Killers'."

Major Kenneth G. Groom is the first author-artist to appear in the QUARTERLY. His article, "Marksmanship," on page 44 will be followed by another in October. He received

his commission from the Tank Destroyer OCS at Camp Hood, Texas, in 1943. During WW II he served in North Africa and in Europe — as a platoon leader and later a company commander. From 1948-50 he was CO of General MacArthur's honor guard. At his own request he transferred from the Field Artillery to the Infantry in '50. He is currently an instructor at TIS.

Lt Morris P. Wolf came into our office not long ago with an "idea." The result is found in our new feature "Quiz" (page 53). He is a graduate of New York University and received his commission through Infantry OCS in 1952. Lt Wolf has had considerable experience (and success) both on the stage and TV, and is no stranger to the field of writing. He is now an instructor at The Infantry School.

Captain Claude K. Josey was graduated from the United States Military Academy in 1945 and is a graduate of the Infantry Officer Advanced Course. He served with the 32d Infantry, 7th Division, in Korea from '45-'48 and with the 187th Abn RCT in Korea in 1950. After being wounded he was returned to the States. Since 1951 he has been an instructor at The Infantry School. His article, "Perimeter Defense," (page 54) is, he feels, "something we should all know more about" — and we agree.

Major Roderick A. Stamey, author-inventor whose "Mobile Infantry" is found on page 64, received his commission from Medical Administration Corps. OCS in 1943 and served in various MAC assignments during WW II in Europe. In 1951, however, he transferred to Infantry and served with Co K, 12th Regt in Korea, later to become a company commander. He is a graduate of the Infantry Officer Advanced Course and is now assigned to The Infantry School. He tells us that he has been a "gadgeteer" all his life and has been interested in bringing "speed" to the foot soldier for a long time. There will be more articles by Major Stamey in future issues of the QUARTERLY.

Major Quinten L. Gates, whose "New Look In Radios" appears on page 73, is fast becoming a regular contributor. (See "The New Counterfire Platoon," April, 1953.) As Major Gates told us when he brought in his manuscript, "I think this article lets Infantrymen know what our new radios can do for them." We believe it successfully does just that.

Captain Lyman H. Clark, whose "one man's opinion" is so ably expressed in "Get the Most From Your Mortars," page 84, was graduated from Infantry OCS in 1943. Since then he has served as a platoon leader, company commander, S1 and S4. In '50 he went to Korea with the 5th RCT. He is a '52-'53 graduate of The Infantry Officer Advanced Course and is now an instructor at The Infantry School.

Captain Lawrence J. Evans, author of "The Desert Is No Obstacle" (page 90), started his military career as an enlisted navigator in the Navy. In 1942, however, he enlisted in the Army and in '44 graduated from the Infantry OCS here at Benning. During WW II he commanded a ranger company. He is a graduate of the Army Foreign Area Specialization Pro-

gram (Middle East) and studied at the American University of Beirut, Beirut, Lebanon. Until attending the '52-'53 Infantry Officer Advanced Course (TIS) he served as a Military Intelligence Research analyst for Lebanon, Syria, and the Arabian Peninsula for the D/A general staff.

"Going to Korea?" by **Colonel Edward L. Rowney** (page 99) is the first of several articles by this author. Col Rowney graduated from the United States Military Academy in 1941 and served in both North Africa and Italy during WW II. The material found in "Going to Korea" is a result of the author's service in Korea (1950-52) where he served as CO of the 38th Infantry and Chief of Staff of the 2d Division. He is presently on duty with the Tactical Department, The Infantry School.

Major James M. Gibson has had a full and varied experience as a combat commander. Commissioned in 1943, he served in Europe both as a rifle platoon leader and company commander in five campaigns. In 1950 he went to Korea, where he served as company commander, battalion S3, battalion executive officer, and battalion commander with the 1st Cavalry Division. Major Gibson is now an instructor at The Infantry School. His article, "Of Men and Bayonets," appears on page 104.

In the October Issue

"I Know the Russian Soldier" — What's he like? How does he think? What's his equipment background? The author of this article has met and talked to Russian Infantrymen. Here are some of the answers.

"Lessons for Leaders" — Practical help for the inexperienced Infantry commander. Some do's and don't's derived from combat experience.

"A Real Convincer" — If you have ever taught marksmanship or commanded a rifle unit, you'll want to read this article. It presents (with blueprints and complete explanation) a device for teaching trigger squeeze that practically eliminated bolos in one infantry division.

"The Jaundiced Eye" — Every commander seeks to raise the efficiency of his unit. Here are some down-to-earth ways to eliminate waste.

"Supply by Air" — If you've ever had to depend on air supply, you know its value. This article tells what every Infantryman should know about supply by air, both as an emergency and a planned technique.

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In this issue the Quarterly *begins a series of illustrations of United States Army uniforms from 1776 to the present day. Next issue: Uniforms of the War of 1812.*